Institutional context and governance of Peruvian fisheries and aquaculture

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Institutional context and governance of Peruvian fisheries and aquaculture

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PREFACE

This report summarizes and describes the main state-driven processes related to the governance of the coastal fisheries and (marine) aquaculture sectors (i.e. mariculture) in Peru. It was produced in the frame of the Peruvian-German Humboldt Tipping project (*Social-Ecological Tipping Points of the Northern Humboldt Current Upwelling System, Economic Repercussions and Governance Strategies*) funded by the German Federal Ministry of Education and Research (BMBF). The project aims to assess the risk of decreased marine ecosystem productivity as a turning point for the ecological, economic and social systems that are interconnected under the Humboldt Current Upwelling System (HCUS). Within this framework, the artec Sustainability Research Center of the University of Bremen is responsible for the working package which focuses on transdisciplinary science and the analysis of the repercussions of environmental changes for marine governance regimes in Peru (WP 7).

The present document originated as part of a larger project deliverable (7.1) summarizing the results of our working package regarding governance analysis and scenario development. Here we present the first part (*Institutional context and governance of Peruvian fisheries and aquaculture*) which provides an overview of the different institutions involved in coastal-marine governance in Peru and their respective functions. Furthermore, the legal framework, input-output controls and surveillance measures, among other details, are described for the Peruvian fisheries and aquaculture sectors. For both cases, limitations of governance and conflicts in the respective sectors are discussed.

The original report's second part (*Elaborating socio-economic scenarios - The Humboldt Current Upwelling System*) was recently published separately and is available as an open access publication:

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ABSTRACT

Marine coastal governance encompasses the formal and informal processes of interaction and decision-making of actors involved in any issue of public interest regarding the marine and coastal environment. This report focuses primarily on summarizing and describing the main state-driven processes related to the governance of the coastal fisheries and (marine) aquaculture sectors (i.e. mariculture) in Peru. However, we also explain the predominant tensions between resource-based development regulations and key user groups. These tensions include strategies of contestation and adaptation of users which can involve or relate to informal and illegal processes in marine and coastal resource management. In a short introduction we will first provide context to the described processes by framing them with broader debates about the ways in which resource-based development is organized in Peru, namely privately owned and centralized, and discursively naturalized through narratives that prioritize economic growth over sustainability. The following second section provides the broader institutional background of fisheries and aquaculture governance by sketching the cornerstones of the Peruvian legal and political systems. The third section of the report is dedicated to the governance of fisheries, especially artisanal and small-scale fisheries, paying special attention to the mechanisms of different fishing access regimes. Peruvian artisanal and small-scale fishing is one of the most relevant economic activities of the Humboldt Current Upwelling System (HCUS) as it provides the majority of fish for domestic human consumption, targeting more than 300 species, and employing four times more people than the industrial fisheries. The fourth and last section then focuses on the governance of mariculture following the same structure as the previous one. In this section, the information presented is being related to the specific case of the Peruvian bay scallop [*Argopecten purpuratus*]. Together with the whiteleg shrimp [*Litopenaeus vannamei*], this species makes up for more than 99 percent of commercial mariculture in Peru over the last decades, and it is of particular importance in the two main research areas of our study. The fifth and sixth subsections of the governance of fisheries (i.e. third section) and mariculture (i.e. fourth section) describe the limits of current governance and important lines of conflicts respectively.

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LIST OF ACRONYMS

Please note that some acronyms reflect the Spanish, others the English original name. Both translations are provided.

AGRORURAL	Rural agricultural productive development program (Span*. Programa de Desarrollo Productivo Agrario Rural*)
AMYGE	Medium and large aquaculture business (Span. *Acuicultura de Mediana y Gran Empresa*)
AMYPE	Micro and small aquaculture business (Span. *Acuicultura de Micro y Pequeña Empresa*)
ANA	National water authority (Span. *Autoridad Nacional del Agua*)
ANP	Natural protected áreas (Span*. Áreas Naturales Protegidas*)
APN	National port authority (Span. *Autoridad Portuaria Nacional*)
AREL	Limited resources aquaculture (Span. *Acuicultura de Recursos Limitados*)
CCRVMA	Convention for the conservation of Antarctic marine living resources (Span. *Convención para la Conservación de Recursos Marinos Antárticos*)
CENEPRED	National center for disaster risk estimation, prevention and reduction (Span. *Centro Nacional de Estimación, Prevención y Reducción del Riesgo de Desastres*)
CENFOTUR	Tourism training center (Span. *Centro de Formación en Turismo*)
CEPLAN	National center for strategic planning (Span. *Centro Nacional de Planeamiento Estratégico*)
CIAT	Inter American tropical tuna commission (Span. *Comisión Interamericana del Atún Tropical*)
CITE	Productive innovation and technology transfer centers (Span. *Centros de Innovación Productiva y Transferencia Tecnológica*)
CONCYTEC	National council of science, technology and technological innovation (Span. *Consejo Nacional de Ciencia, Tecnología e Innovación Tecnológica*)
DHC	Direct human consumption (Span. *Consumo humano directo*)
DICAPI	General directorate of captaincy and coast guard (Span. *Dirección General de Capitanías y Guardacostas*)
DIGESA	General directorate of environmental health (Span. *Dirección General de Salud Ambiental*)
DIREPRO	Regional directorate of production (Span. *Dirección Regional de la Producción*)
DL	Legislative decree (Span. *Decreto Legislativo*)
DS	Supreme decree (Span. *Decreto Supremo*)
DVPA	Vice Ministry of fisheries and aquaculture (Span. *Despacho Viceministerial de Pesca y Acuicultura*)
EEZ	Exclusive economic zone (Span. *Zona económica exclusiva*)
ENSO	El Niño Southern oscillation (Span. *El Niño Oscilación Sur*)

EIA	Environmental impact assessment (Span. *Evaluación de impacto ambiental*)
ENV	Environmental (Span. *Medioambiental*)
FAO	Food and agriculture organization of the United Nations (Span. *Organización de las Naciones Unidas para la Alimentación y la Agricultura*)
FIUPAP	Federation of integration and unification of artisanal fishers of Peru (Span. *Federación de Integración y Unificación de los Pescadores Artesanales del Perú*)
FOB	Free-on-board value (Span. *Libre a bordo*, *Puerto de carga convenido*)
FONDEPA	Artisanal fisheries development fund (Span. *Fondo de Desarrollo Pesquero Artesanal*)
FOFIP	Fisheries infrastructure financing fund (Span. *Fondo de Financiamiento de Infraestructura Pesquera*)
FONRESPE	Fishing sector reactivation fund (Span. *Fondo de Reactivación del Sector Pesquero*)
FONDEPES	National fund for fisheries development (Span. *Fondo Nacional de Desarrollo Pesquero*)
GFL	General fishing law (Span. *Ley general de pesca*)
HCUS	Humboldt current upwelling system (Span. *Sistema de la corriente de Humboldt*)
HIDRONAV	Hydrography and navigation department (Span. *Dirección de Hidrografía y Navegación*)
IHC	Indirect human consumption (Span. *Consumo humano indirecto*)
IIAP	Research institute of the Peruvian Amazon (Span. *Instituto de Investigaciones de la Amazonía Peruana*)
IGP	Geophysical institute of Peru (Span. *Instituto Geofísico del Perú*)
IMARPE	Institute of the sea of Peru (Span. *Instituto del Mar del Perú*)
INEI	National institute of statistics and informatics (Span. *Instituto Nacional de Estadística e Informática*)
INGEMMET	Geological, mining and metallurgical institute (Span. *Instituto Geológico, Minero y Metalúrgico*)
INS	National institute of health (Span. *Instituto Nacional de Salud*)
ITP	Fishing technological institute (Span. *Instituto Tecnológico Pesquero*)
ITQ	Individual Transferable Quotas (Span. *Cuotas individuales transferibles*)
IUU	Illegal, unreported and unregulated (Span. *Pesca ilegal, no declarada y no reglamentada*)
IVQ	Individual vessel quota (Span. *Límite máximo de captura por embarcación*)
LMCE	Individual vessel quota (Span. *Límite Máximo de Captura por Embarcación*)
LMCTP	Total allowable catch (Span. *Límite Máximo de Captura Total Permisible*)
MEF	Ministry of economy and finance (Span. *Ministerio de Economía y Finanzas*)
MEIA	Modification of environmental impact assessment (Span. *Modificatoria de Evaluación de Impacto Ambiental*)
MINEM	Ministry of energy and mines (Span. *Ministerio de Energía y Minas*)

MIDIS	Ministry of development and social inclusion (Span. *Ministerio de Desarrollo e Inclusión Social*)
MIMP	Ministry of women and vulnerable populations (Span. *Ministerio de la Mujer y Poblaciones Vulnerables*)
MINAGRI	Ministry of agriculture and irrigation (Span. *Ministerio de Agricultura y Riego*)
MINAM	Ministry of environment (Span. *Ministerio del Ambiente*)
MINCETUR	Ministry of foreign trade and tourism (Span. *Ministerio de Comercio Exterior y Turismo*)
MINSA	Ministry of health (Span. *Ministerio de Salud*)
MSES	Marine social-ecological system (Span. *Sistema socio-ecológico marino*)
MTC	Ministry of transport and communications (Span. *Ministerio de Transporte y Comunicaciones*)
NGO	Non-governmental organization (Span. *Organización no-gubernamental*)
OEFA	Environmental assessment and inspection agency (Span. *Organismo de Evaluación y Fiscalización Ambiental*)
OSPA	Artisanal fishers' social organization (Span. *Organización Social de Pescadores Artesanales*)
PCMB	Bivalve mollusc control program (Span. *Programa de Control de Moluscos Bivalvos*)
PDIPA:	Artisanal fishing infrastructure plan (Span. *Plan de Infraestructura Pesquera Artesanal*)
PDRC	Concerted regional development plans (Span. *Planes de Desarrollo Regional Concertado*)
PCM	Presidency of the council of ministers (Span. *Presidencia del Consejo de Ministros*)
PMP	Fishing management plans (Span. *Planes de Manejo Pesquero*)
PRODUCE	Ministry of production (Span. *Ministerio de la Producción*)
PROINVERSION	Private investment promotion agency (Span. *Agencia de Promoción de la Inversión Privada*)
PROMPERU	Peruvian promotion commission for export and tourism (Span. *Comisión de Promoción del Perú para la Exportación y el Turismo*)
RE	Executive resolution (Span. *Resolución Ejecutiva*)
RD	Directorate resolution (Span. *Resolución Directoral*)
RISPAC	Regulation of fiscalization and sanction of fishing and aquaculture activities (Span. *Reglamento de Fiscalización y Sanción de las Actividades Pesqueras y Acuícolas*)
RISSPA	Regulation of infractions and sanitary sanctions for fisheries and aquaculture (Span. *Reglamento de Infracciones y Sanciones Sanitarias Pesqueras y Acuícolas*)
RM	Ministerial resolution (Span. *Resolución Ministerial*)
ROP	Fishing regulation schemes (Span. *Reglamento de Ordenamiento Pesquero*)
RS	Supreme resolution (Span. *Resolución Suprema*)

SANIPES	National agency for fisheries health (Span. *Organismo Nacional de Sanidad Pesquero*)
SEIA	National system of environmental impact assessment (Span. *Sistema Nacional de Evaluación de Impacto Ambiental*)
SENACE	National service of environmental certification for sustainable investments (Span. *Servicio Nacional de Certificación Ambiental para las Inversiones Sostenibles*)
SENAMHI	National service of meteorology and hydrology of Peru (Span. *Servicio Nacional de Meteorología e Hidrología del Perú*)
SERNANP	National servive of natural protected areas by the state (Span. *Servicio Nacional de áreas Naturales Protegidas por el Estado*)
SES	Social-Ecological System (Span: *Sistema socio-ecológico*)
SINACUI	National aquaculture system of Peru (Span. *Sistema Nacional de Acuicultura de Perú*)
SINAGERD	National system of disaster risk management (Span. *Sistema Nacional de Gestión del Riesgo de Desastres*)
SINANPE	National system of natural protected areas by the state (Span. *Sistema Nacional de Áreas Naturales Protegidas por el Estado*)
SINEFA	National system of environmental assessment and inspection (Span. *Sistema Nacional de Evaluación y Fiscalización Ambiental*)
SINIA	National system of environmental information (Span. *Sistema Nacional del Información Ambiental*)
SISESAT	Vessel satellite tracking system (Span. *Sistema de Seguimiento Satelital de Embarcaciones*)
SNGRH	National system of water resources management (Span. *Sistema Nacional de Gestión de Recursos Hídricos*)
SNP	National fisheries society (Span. *Sociedad Nacional de Pesquería*)
SOC	Socio-economic (Span. *Socio-económico*)
SPRFMO	South Pacific regional fisheries management organisation (Span. *Organización regional de gestión pesquera del Pacífico Sur*)
SUNAT	National superintendency of customs and tax administration (Span. *Superintendencia Nacional de Aduanas y de Administración Tributaria*)
TAC	Total allowable catch (Span. *Límite máximo de captura total permisible*)
TGPSM	San Martín terminal port (Span. *Terminal Portuario General San Martín*)
TPP	Paracas terminal port (Span. *Terminal Portuario Paracas*)
VUA	Unique window for aquaculture (Span. *Ventanilla Única de Acuicultura*)
WP	Working package (Span. *Grupo de trabajo*)

INTRODUCTION

With an average annual capture production of $6{,}4x10^6$ tons (for the period 2005-2014), Peru ranks as the second most important fisheries producer worldwide (after China), mainly due to the landings of the Peruvian anchoveta [*Engraulis ringens*] (anchoveta hereinafter), which represents 85% of annual catches (FAO, 2018). The fisheries sector represents, after mining, Peru's most important production sector, contributing between 0.7 and 1.5% to the country's GDP (for the period 2008-2017; PRODUCE, 2018). To a lesser extent but also relevant, the aquaculture sector has also experienced economic growth since its emergence in 1970s, and, as with fisheries, this growth has been sustained by the exploitation of only few species: trout [*Oncorchynchus mykiss*] and tilapia [*Oreochromis aureus*] for continental aquaculture, and Peruvian bay scallop [*Argopecten purpuratus*] and whiteleg shrimp [*Litopenaeus vannamei*] for mariculture. The export of these primary commodities (together with hydrocarbon) has allowed Peru to undergo a sustained GDP growth since the beginning of the 21st century, positioning itself as a key Latin American extractivist nation.

Peru´s extractivist political economic strategy has been facilitated by a series of liberalization and privatization policies that started in the 1990s and are enshrined in the constitution of 1993. This way, Peru follows a development model where privately owned large-scale extractive companies/corporations lead production (Andreucci and Kallis, 2017; Bebbington and Humphreys Bebbington, 2011; Ibarra et al., 2000a, b) while the state has a subsidiary role in it (it has to foster and regulate private productive forces but cannot compete with/take over or complement them). In the case of marine living resource extraction, this means that the state fosters the development of industrial fishing/mariculture enterprises over small or mid-sized activities. As we will show in this report, some actions towards this mandate include regulations to promote industrial fishing while regulating small-scale fisher activities to assure that these do not compete with industrial fishing. A further example is the granting of private rights to Peruvian bay scallop producers to facilitate capital concentration in this subsector, even at the cost of privatizing marine space.

Many of the extractive regulatory processes are controlled and determined by the central government in Lima despite the process of decentralization that officially started in July 2002 (Law N° 27783 [2002]). This process was planned to be carried gradually by stages (art.83.); being in its third stage (started in 2004) when the transfer of functions to the regional governments in the productive sectors (in this case fisheries and mariculture) would take place. However, for many regions, by December of 2018 (RM N° 577-2018-PRODUCE) the Ministry of Production (PRODUCE) was still transferring functions in fisheries matters from the competence of regional governments as stated in their organic laws. Moreover, technical and financial

resources have not been transferred sufficiently to accomplish the according tasks (Contraloría General de la República, 2014). Generally, industrial fishing falls under the responsibility of PRODUCE while artisanal and small-scale fisheries are supervised by regional governments (DIREPRO). However, the decentralization has been partly reversed in recent years with PRODUCE taking over some regulatory functions as in the case of the large-scale aquaculture production (> 150 gross tons/year).

It is also important to mention that the Peruvian resource-based development strategy has been discursively naturalized through narratives of sustainability. In 2007 the World Bank published a report in which extractivism and sustainability in Peru were pictured as compatible and mutually reinforcing as the fiscal revenues of extractive industries could constitute a major source of benefits for the promotion of sustainability. Moreover, Takahasi and Meisner (2012) which studied the competing discourses in the debate about the creation of the Ministry of Environment (MINAM) found that it was dominated by neoliberal discourses. However, in practice the sustainability of the marine-coastal social ecological systems of Peru is at risk. While the extractive industries are major potential sources of pollution, the Peruvian environmental regulations are weak and the role of the MINAM minor. Moreover, the concentration of the fisheries sector on a single species is a factor that has – more than once – been criticized in the context of sustainability practices (Mailuf et al., 2016). Specifically, in Peru conflicts between the artisanal/small-scale and industrial fishing sectors typically concern the perceived (and actual) exclusion of the former to formally take part in high profit economic activities (such as the production of fishmeal/ fish oil economic) which pushes fisheries towards different types of overfishing.

With ever increasing complexity of human activities in the marine-coastal space, it is – as a first step – important to understand the legislative framework that aims at regulating these activities. We use the Peruvian study setting for a discussion of the broader legal framework and different institutions involved in the fisheries sector (section A), to then present regulatory tools for the management of the fisheries (section B) and mariculture sector (section C). In addition, sections B and C close with a final part in which we present the main informal and illegal processes and practices as well as conflicts surrounding marine fisheries and aquaculture in Peru. This will serve as an important baseline for future scientific studies on marine and coastal governance in the scope of the Humboldt Tipping Project as understanding the tensions between state interventions and the “self-governance” efforts of coastal communities can be critical to establish and effective framework for marine and coastal resources use (Snelgrove et al., 2009; Nakandakari et al., 2017; Jiménez and Saavedra-Díaz, 2018).

A - LEGAL AND INSTITUTIONAL CONTEXT OF FISHERIES AND AQUACULTURE IN PERU

A.1. The State

The current Peruvian constitution was enacted in 1993. Regarding the marine and costal environments, it is important to highlight that the document points in its art.66. (cap. II. *Del ambiente y los recursos naturales*) that the state controls the renewable and non-renewable resources and is the one that grants permits for their use to others.

> *Los recursos naturales, renovables y no renovables, son patrimonio de la Nación. El Estado es soberano en su aprovechamiento y de su otorgamiento a particulares.*
>
> *Por ley orgánica se fijan las condiciones de su utilización y de su otorgamiento a particulares. La concesión otorga a su titular un derecho real, sujeto a dicha norma legal.*

In line with this approach, the General Fishing Law (GFL hereinafter) (DL N° 25977 [1992]), which is the overarching regulatory framework for fisheries, declares that the "hydro-biological resources contained in the jurisdictional waters of Peru are the patrimony of the nation" and that is the responsibility of the state to "regulate the integrated management and rational exploitation of these resources" (art.2.). However, some authors have pointed to the problematic rhetorical separation of the 'nation' from the 'state' employed in the law; this way the national could stand in for the interests of private businesses when opposed to state control as we have previously mentioned (Viatori and Medina, 2019).

As laid down in the constitution, the Peruvian state has three independent powers: legislative, executive and judicial power.

A.1.1. Legislative Power

This power resides in the Congress of the Republic which is formed by 130 delegates that are elected every five years through electoral processes. The congress' main function is to issue laws and legislative resolutions as well as to interpret, modify or repeal existing ones; also, through organic laws regulates the structure and functioning of the state. Figure 1. shows the hierarchical legal system of Peru.

A.1.2. Executive Power

The executive power is in charge of enforcing the laws and promoting state policies. It is composed of the presidency of the Republic, the council of ministers and the public entities of the executive power.

The president of the Republic is the head of the state for five years and among other things must comply and enforce the constitution, treaties, laws and other legal provisions; direct the general policy of the government; and exercise the power to regulate laws, issue decreed and resolutions.

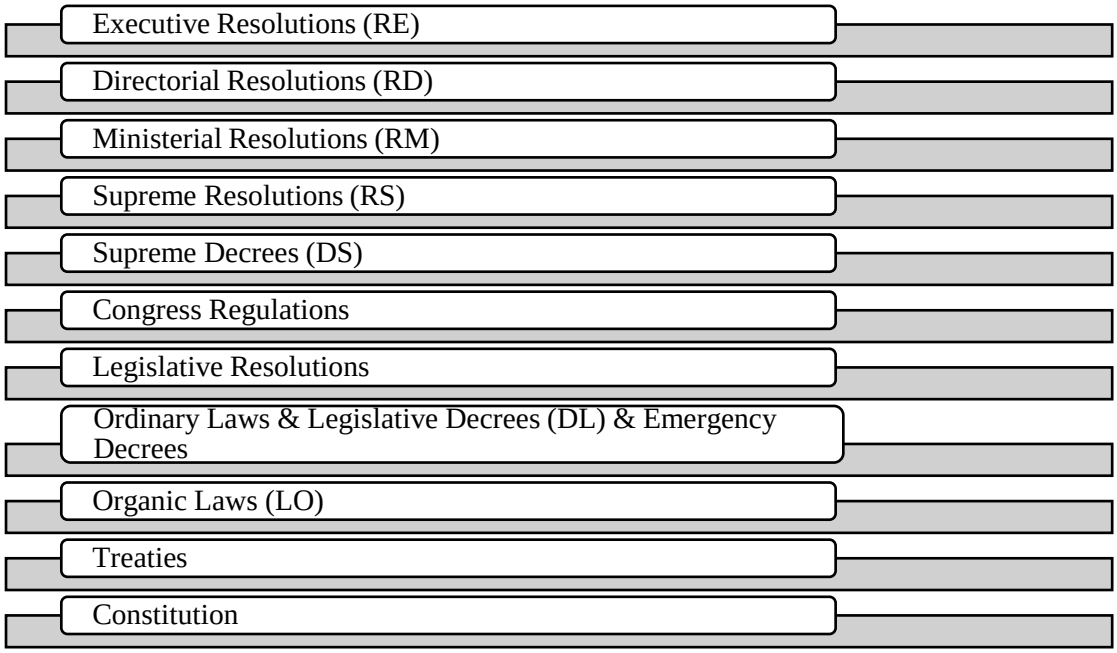

Figure 1. Hierarchical scheme of the Peruvian legal system. The approving authority for the organic laws and ordinary laws is the Congress of the Republic. The approving authority for the legislative decrees, the emergency, the supreme decrees and the supreme resolutions is the parliament of the Republic; the last two together with the minister council. The minister council is also the approving authority for the ministerial resolutions. And the parliament is also the approving authority of the law decrees. The directorial resolutions are approved by the administrative directors and the executive resolutions by the administrative heads. The regional and municipal ordinances and decrees are approved by the regional governments or the major.

Source: adapted from https://www.mardelperu.pe/pesca/3/reglas-de-juego-en-el-sector-pesca.

Elaborated by María Garteizgogeascoa

The council of minister is responsible for the direction and management of public services. The council of minister also has a president. The president (i.e. president of the council of ministers) and the ministers are appointed and removed by the president of the Republic. The president of the council of ministers can or cannot be a minister. The council of ministers mainly approves bills that the president of the Republic submits to the congress and approves legislative decrees and emergency decrees issued by the president of the Republic. In Table 1 we summarize the main ministries and other institutions that take a role in the marine-coastal environment management.

Table 1. Summary of the main institutions of the executive power that are related to the management of the marine-coastal environments.

Sector	Institution	Role in the HCUS
Agrarian	MINAGRI	Governing body in charge of formulating and supervising the national agrarian policy. Given that coastal agriculture has grown this institution is important to for the Humboldt coastal-marine SES.
	AGRORURAL	Extract and commercialize guano from the islands.
	ANA	Its mission is to administer and supervise the use of water resources ensuring their quality, quantity and good ecological status. It is important for several reasons: it collaborates with IMARPE on the monitoring of the river mouths and the fact that freshwater water availability is a main issue in coastal communities such as those of the regions of Ica and Piura where water is scarce or there is a lack of water sanitation systems.
Environment	MINAM	Created in 2008 (DL N° 1013 [2008]) The aim is the conservation of the environment ensuring the sustainable, responsible, rational and ethical use of natural resources and the environments that supports them. Since 2015 (RM N° 1899 – 2015-MINAM) they have been engaged in promoting the intersectoral work between institutions to develop an integral management of the marine-coastal environments. They actively participate with local communities. It is formed by the SEIA (*Sistema nacional de evaluación de impacto ambiental*), SNGRH (*Sistema nacional de gestión de recursos hídricos*), SINIA (*Sistema nacional de información ambiental*), SINEFA (*Sistema nacional de evaluación y fiscalización ambiental*), and the SINANPE (*Sistema nacional de áreas natural protegidas del estado*).
	SERNANP	Attached to the MINAM, is in charge of directing and establishing the technical and administrative criteria for the conservation of the natural protected areas (ANP; which can be the following types: with permanente status - *reserva nacional, coto de caza, santuario histórico, parque nacional, reserva comunal, santuario nacional, bosque de protección, reserva paisajística, refugio de vida silvestre;* and with transitory status- *zonas reservadas* (e.g. Illescas in the northern coast)). Carries out the work in coordination with regional, local governments and owners of properties recognized as private conservation areas. And promotes citizen participation in the management of the ANP. Establishes the inspection and control mechanism, as well as the corresponding administrative infractions and sanctions. Apply the sanctions of: reprimand, fine, confiscation, immobilization, closure or suspension. Is the governing body of the SINANPE which aims to contribute to the sustainable development of Peru through biodiversity conservation.
	OEFA	Specialized technical body attached to MINAM and in charge of environmental inspection, supervision, control and sanction.
	SENAMHI	Plan, organize, coordinate, regulate, direct and supervise meteorological, hydrological and related activities, through scientific research, studies and projects, and the provision of services in matters within its competence.
	SENACE	Review and approve the EIA that comprise public, private or mixed capital investment projects, of national and multi-regional scope that involve activities that may cause a significant environmental impact. *Except for the EIA that are excluded by DS with the vote from the council of ministers

Foreign trade and tourism	MINCETUR	Important as it is related to activities that directly and indirectly affect the HCUS such as the promotion of exports and tourism. Taken into consideration that coastal-marine national and international tourism has expanded and fisheries and agrarian exports are still rising, the mission of the MINCETUR to promote the sustainable development of the foreign trade, tourism and crafts is of critical importance for the HCUS.
	PROMPERU	For the fishing sector, PROMPERU compiles and publishes annual export statistics; it analyzes the development of new products and target markets. For the tourism sector, it proposes policies for the diffusion of the image of Peru in order to attract tourists and international investments.
	CENFOTUR	Train people needed in all areas for the country´s tourism development.
Defense	DICAPI	Responsible for regulating and ensuring the safety of human life, the protection of the environment and its natural resources as well as for repressing all illegal acts – exercising control and surveillance of all activities carried out in the aquatic environment. It dictates regulations for compliance with international laws and conventions; controls and registers the afloat material dedicated to maritime, river and lake activities; it also regulates the activities carried out by natural and legal persons in the aquatic environment. In relation to pollution, it works to control and surveil (ships, aquatic facilities, etc.) to prevent and combat the effects of pollution. It aims to detect unauthorized discharges and in oil spills scenarios is in charge to execute the national contingency plan. Also responsible for the administration of the international agreement or prevent pollution by ships and the international maritime code for dangerous goods. In charge of the (pre) registration of vessels and monitoring (post-registration) the vessels. In charge of the training of: artisanal and industrial fishers, merchant seafarers, divers, companies engage in rescue activities, etc., in coordination with the maritime training centers
	HIDRONAV	Administer, operate and investigate activities related to environmental science in the aquatic environment, in order to contribute to the national development and provide support and safety in navigation.
Economy	MEF	It guides the development of economic activities such as fishing, aquaculture, tourism, hydrocarbon extraction, mining, etc., and grants research budgets to IMARPE, ITP, IGP, INGEMMET or control and surveillance budgets to OEFA and PRODUCE.
	SUNAT	Besides the functions of administration, collection and inspection of the taxes, SUNAT plays and important role in the systematization of the legislation and statistical information on foreign trade, as well as that related to internal and customs taxes. This is essential, for example, to validate the production of national fishmeal and verify, by means of a mass balance, the true magnitude of anchoveta landings. SUNAT controls merchandise traffic. Which is particularly important for the development of traceability fisheries and aquaculture systems.
	PROINVERSION	Is in charge of promoting investment none dependent on the Peruvian state by agents under the private regime with the aim of boosting Peru´s competitiveness and sustainable development.
Energy and mining *Both institutions are important for the HCUS for the increasing marine-	MINEM	Its purpose is to promote private investment in mining-energy activities within a competitive legal framework, within a sustainable development approach and encouraging research and training; also contributing to the preservation of the environment, to achieving a safe industry, to harmonious relations between the actors and to energy development with a criterion of subsidiarity. At the functional level, MINEM (i) formulates and executes the policies for the promotion and technification of electricity, hydrocarbons and mining, (ii) evaluates and updates the inventory of

coastal related socio-environmental conflicts arising from mining and oil activities (see subsection B.6.4 & C.6.2)		the country's mining and energy resources, (iii) guides and encourages research scientific and technological within the scope of its competence, (iv) grants concessions and concludes contracts for the development of mining-energy activities, (v) promotes the strengthening of the relations of companies in the Energy and Mining Sector with the civil society or population involved in the development of their activities, (vi) fosters the efficient use of energy and the use and development of renewable energy resources, and (vii) maintains coordination relationships on the management of sustainable sector development with the regional governments and local governments: Aims are mainly carried out through the Geological Mining and Metallurgical Institute (INGEMMET).
	PeruPetro S. A	State company of private law that seeks to promote investment and supervise hydrocarbon exploration and exploitation activities in the country, harmonizing the interests of the state, communities and investors. It also proposes to the MINEM policy options related to the use of hydrocarbons and participated in the preparation of sectoral plans.
Social	MIDIS	Important role because many of the users of the HCUS live in poverty.
	MIMP	In charge of policies related to gender equality, the protection and development of vulnerable sector of the population and minorities. Recently the MIMP has recognized the work of women in the fisheries industry. https://www.gob.pe/institucion/mimp/noticias/85305-mimp-reconoce-labor-de-la-mujer-en-la-industria-pesquera
Health	MINSA	
	DIGESA	Part of the Ministry of Health (MINSA). In charge of proposing and enforcing the national environmental health policy in order to control polluting agents and improve environmental conditions for the protection of the heath of the population.
	INS	In charge of promoting food security for vulnerable population.
PCM	CEPLAN	Seeks to exercise the effective stewardship of the National Strategic Planning System, conducting it in a participatory, transparent and concerted manner, thus contributing to the improvement of the quality of life of the population and the sustainable development of the country.
	CONCYTEC	Responsible for directing, promoting, coordinating, supervising and evaluating the state action in the fields of science, technology and technological innovation; and guide the actions of the private sector in these realms.
	CENEPRED	Its mission is to coordinate, facilitate and supervise the formulation and implementation of the National Policy and the National Plan for the Management of Disaster Risk, in what corresponds to the processes of Estimation, Prevention and Reduction of disaster risk and Reconstruction; as well as developing guidelines and providing technical assistance to the Governing Body and the entities that make up SINAGERD (*Sistema nacional de gestión del riesgo de desastres*), on the policy, mechanisms and technical instruments necessary for planning and organization.
	INEI	responsible for producing and disseminating the official statistical information that the country needs, with the quality, opportunity and coverage required, with the purpose of contributing to the design, monitoring and evaluation of public policies and to the decision-making process of socioeconomic agents, the public sector, and the community in general.
Production	PRODUCE	In charge of leading the national policy of fishing and aquaculture at a national level in both marine and continental waters. It formulates, approves and supervises the fisheries management and promotes the scientific and technological research of the sector. Its scope extends over the ecological conditions of the species´

		habitat, the shape, quality and health of the exploitation, processing and marketing means and the species themselves. Regarding aquaculture it is the maximum authority and is responsible for directing the SINACUI
	FONDEPES	Aims to promote, through technical and financial support, the development of artisanal fishing and aquaculture activities in marine and continental areas. In particular, it is dedicated to the provision of basic infrastructure such as artisanal fishing docks as well as aquaculture hatcheries.
	ITP	In charge of the development, innovation, adaptation and technological transfer in order to develop better quality products and new aquaculture technologies.
	IMARPE	Institution in charge of providing the scientific information in which the regulatory frameworks will be based.
	SANIPES	Responsible for regulating, supervising, sanctioning and anything related to health throughout the production chain of the fishery and aquaculture resources, from their extraction to the final consumption.
Transport and communi-cations	MTC	Through the general directorate of aquatic transport is in charge of promoting, regulating and managing the development of water transport activities as well as waterways. Important also due to its functions related to the authorization and inspection of tourist water transport services. Together with DICAPI ensures the compliance with international agreements
	ENAPU S.A.	Institution in charge of managing and maintaining the ports of the Peruvian state
	APN	Attached to the MTC, is in charge of elaborating the national port development plan.
Housing, Construction and Sanitation	Ministry of housing, construction and sanitation	Designs, regulates, executes, supervises and evaluated the policies and actions regarding housing, urban planning, construction and sanitation. Therefore, it is important, as more than 50% of Peruvian population is settle in coastal areas. It has to coordinate with ANA and MINAM water management issues.

Source: adaptated from De la Puente and Sueiro, 2013; Elaborated by María Garteizgogeascoa

Other institutions that played a role in the marine-coastal environment and that for example have been part of the working group to develop the national marine policy are: the Ministry of Education, the Ministry of Foreign Affairs and the Ministry of Culture.

A.1.3. Judicial Power

The judicial power emanates from the people and is exercised through the hierarchical structure of judicature, in accordance with the constitution and the laws. It is made up of jurisdictional bodies that administer justice on behalf of the nation. The jurisdiction bodies are: the supreme court of justice, the superior courts of justice, the specialized and mixed courts, the legal courts of justice and the justice of peace. The president of the supreme court is also the president of the judicial power. According to the constitution, the jurisdictional function is incompatible with any other public or private activity with the exception of university teaching. Regarding the scope of the marine-coastal environment is relevant in the sense that is the

contentious administrative action that allows to challenge the administrative resolutions of the executive.

A.2. Regional Governments

At the end of 2002 the current regional governments were created through the Law N° 27867 [2002]. It is important to note that, at first, the proposal of decentralization/regionalization implied that the regions were going to be constituted by several of the departments in which Peru is divided; however, at the end this did not occur. Instead, regional governments created generally coincided with the departmental limits. Therefore, the departments refer to the geographical delimitation of a jurisdiction and the regions to the political-administrative matters. There are some exceptions to this rule, for instance the Provincia Constitucional del Callao, inside the Lima department, has its own regional government. So, since 2003 there are 24 departments and 2 provinces with special regimes (Provincia Constitucional del Callao and Provincia de Lima). From the 24 departments 10 are coastal (from south to north: Tacna, Moquegua, Arequipa, Ica, Lima, Áncash, La Libertad, Lambayeque, Piura and Tumbes).

The regional governments must formulate and approve the concerted regional development plans (PDRC) with the municipalities and the civil society. Regarding the PDRC and the fisheries activity, the NGO Oceana conducted an analysis in 2018 (Pajuelo and Sueiro, 2018) and concluded that many coastal regions describe the fisheries activities only briefly and in a very simplistic way; that these descriptions are usually centered on infrastructure issues (e.g. landing sites) despite the fact that PRODUCE (i.e. national level) is responsible for this. Specific aims or strategic actions for the fisheries sector are (almost) non-existent in many of them (such as the PDRC 2010-2021 of Ica or PDRC 2016-2021 of Piura) (Pajuelo and Sueiro, 2018). This is surprising as Ica and Piura are departments where artisanal fishing and aquaculture are key livelihoods activities (PRODUCE, 2018). Regarding aquaculture activities at a regional scale, the national aquaculture plan (approved through DS N° 001-2010-PRODUCE) includes promoting regional aquaculture plans, however not all departments have it.

The aquaculture competences are shared between the national government (through PRODUCE) and the regional and local governments (through DIREPRO); the latter are in charge of the limited resource aquaculture (AREL) and micro and small business aquaculture (AMYPE), while PRODUCE is in charge of medium and large company aquaculture (AMYGE) (see section C). Same occurs for the fisheries competences, the Law N°27867 [2002] (art.52.) established that the functions related to the artisanal fishing were transferred from PRODUCE to its corresponding DIREPRO (except the artisanal fisheries in Lima Metropolitana). Therefore, PRODUCE has exclusive competences for the fisheries and aquaculture management at

national level, the large-scale fishing and fishing in national protected areas. Figure 2 summarizes the regional competence related to artisanal fisheries.

Figure 2. Summary of the main regional competences to the artisanal fisheries.

Source: Pajuelo and Sueiro, 2018; Elaborated by María Garteizgogeascoa

Various cases, and especially in fisheries management matters, have been documented in which national norms and objectives are in conflict with regional ordinances (De la Puente et al., 2011). Also, in reality many of the competences have not been transferred or cannot be exercised meaningfully; for example, regarding the first point of Figure 2, none of the regional governments has an exclusive regional plan related to artisanal fisheries (there is no national plan for artisanal fisheries as there is for aquaculture). In this regard, in 2019 the national marine policy was approved (DS N°012-2019-DE) as a first attempt to develop a common plan to avoid the fragmentation of aims and actions; however, is not particularly focusing on artisanal fisheries. During a fieldwork phase in November and December of 2019, several

fishers from the region of Ica expressed their will to develop an artisanal fisheries regional plan. Also, regarding the last point of Figure 2, the regional governments do not have marine jurisdiction.

More generally, the decentralization process was not accompanied by an adequate budget transfer. Between 2005 and 2018, the budget allocated to fishing has been on average 0,25 % of the total regional budget. This includes expenses in: administration (20-45% of the quarter percent), fisheries (10-30%) and aquaculture (35-55%) (Pajuelo and Sueiro, 2018).

A.3. State Fisheries and Aquaculture Institutions

Several institutions are involved in the Peruvian fisheries and aquaculture legislation and regulation (Figure 3, following page).

A.3.1. Ministerio de la Producción - PRODUCE

The Ministry of Production through its Vice Ministry of Fisheries and Aquaculture[1] (DVPA) is in charge of leading the national policy of fishing and aquaculture at a national level in both marine and continental waters. It formulates, approves and supervises the fisheries management and promotes the scientific and technological research of the sector. Its scope extends over the ecological conditions of the species´ habitat, the shape, quality and health of the exploitation, processing and marketing means and the species themselves.

Regarding aquaculture it is the highest authority and responsible for directing the national aquaculture system (SINACUI) (see subsection A.3.8.) to ensure compliance with SINACUI´s objectives (art.4. - DS N° 003-2016-PRODUCE) which are the following:

1. Coordinate the application of the national aquaculture policy at the national level.
2. Promote a) the development of sustainable aquaculture, through research, technological development and innovation, b) the diversification of aquaculture activities, c) the administrative simplification, and d) the application of good practices, recognizing the environmental, cultural, economic and social value of aquaculture activities.
3. Promote the continuous improvement and integration of the administrative procedures and instruments and aquaculture management.
4. Promote and coordinate actions that contribute to the prevention and resilience of the aquaculture subsector against climate change and other external factors.
5. Promote the generation of spaces for coordination with the public and private organizations linked to the aquaculture activity.

[1] Previously Ministry of Fisheries.

6. Promote food security through aquaculture in less developed socio-economic areas.

PRODUCE, together with the regional governments is in charge of the supervision and control of the aquaculture authorizations and concessions, in order to achieve the sustainable development of aquaculture.

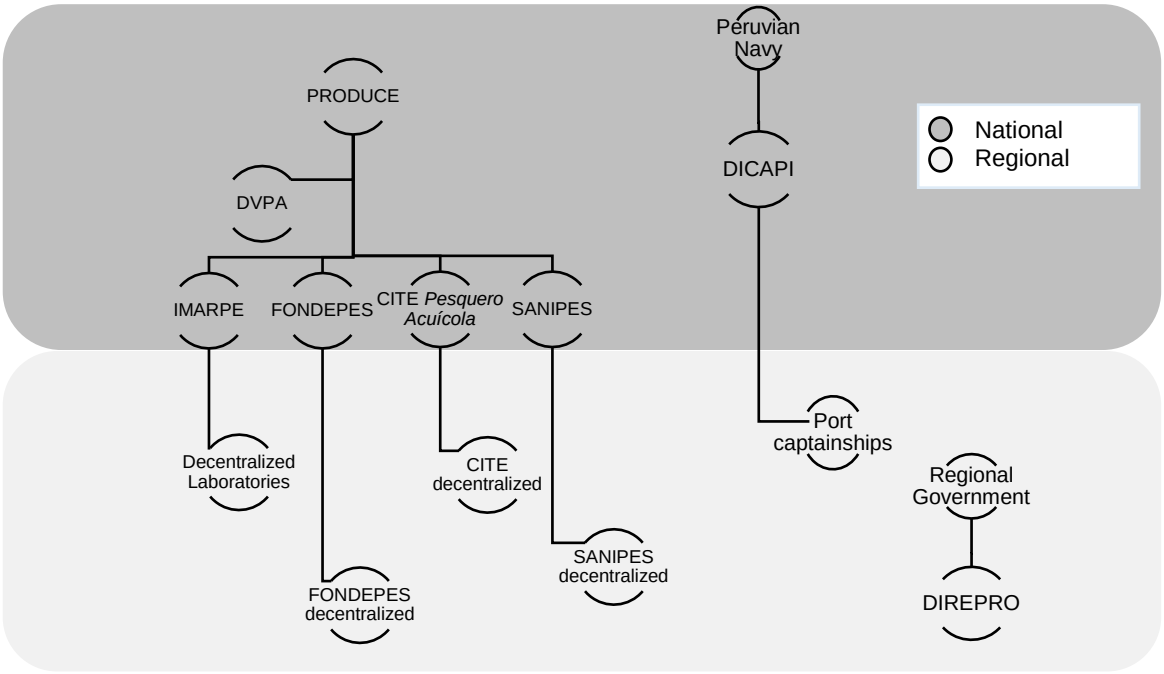

Figure 3. Governmental institutions regulating Peruvian fishing and scope of operation.

Elaborated by Isabel E. Gonzales

A.3.2. Instituto del Mar Peruano - IMARPE

IMARPE is a dependent entity of PRODUCE that aims to carry out scientific research in order to promote the rational and sustainable use of hydrobiological resources. It is the institution in charge of providing the information in which the regulatory frameworks will be based. For instance, it is the one that provides the technical opinion for the establishment of quotas, for the opening and closing of fishing seasons and for the establishment of catch minimum sizes. Its research programs are also directed towards the development of a sustainable national aquaculture both marine and continental (i.e. in inland waters); it can also bring support to the private sector in the execution of research projects and experimental pilot studies of new cultivated species. In this regard, IMARPE implements scientific, technological and innovation research programs, as well as experimental pilot cultures in the aquaculture centers of the production sector in order to move on the productive escalation of species of high commercial value. IMARPE activities have to be articulated through the SINACUI always considering the

priorities stated in the national program of science, technological development and innovation of aquaculture from PRODUCE.

A.3.3. Centros de Innovación Productiva y Transferencia Tecnológica - CITEs

These centers form part of the Technological Institute of Production (ITP), which is a depend entity of PRODUCE that is in charge of the development, innovation, adaptation and technological transfer in order to develop better quality products and new aquaculture technologies. The CITEs are classified by production chain. The CITE involved in fisheries is the CITE *Pesquero Acuícola*, and there are currently two CITEs dedicated to marine-fishing resources: CITE Callao and CITE Piura. CITEs are conceived as points of confluence between the state, the academy and the private sector, to the extent that it promotes research for innovation and improvement of products in favor of improving their competitiveness and a better use of the market opportunities by the national companies. They also provide capacity development for fishers' trough the promotion of courses.

A.3.4. Organismo Nacional de Sanidad Pesquera - SANIPES

Technical entity attached to PRODUCE, funded in 2014, that is responsible for regulating[2], supervising and sanctioning[3] anything related to health throughout the production chain of the fishery and aquaculture resources, from their extraction to the final consumption. It evaluates and grants sanitary habilitations to vessels, landing sites, harvest areas, transporting vehicles and processing plants. Likewise, it is in charge of sanctioning non-compliance with health codes as appropriate. In addition, they issue sanitary registries and official sanitary certificates for the commercialization of hydrobiological products inside and outside the country.

A.3.5. Fondo Nacional de Desarrollo Pesquero - FONDEPES

The National Fund for Fisheries Development is the result of the merger of the funds for: 1) the fisheries infrastructure financing (FOFIP), 2) the fishing sector reactivation (FONRESPE), 3) the artisanal fisheries development (FONDEPA), and 4) the artisanal fishing infrastructure program (PDIPA). It aims to promote, through technical and financial support, the development of artisanal fishing and aquaculture activities in marine and continental areas. In particular, it is dedicated to the provision of basic infrastructure such as artisanal fishing docks as well as aquaculture hatcheries.

[2] During the fieldwork phase of November-December 2019 it was mentioned that SANIPES wanted to update the regulative scheme by the end of the year because the one available was from 2001. However, it is still not available (20th May 2020).
[3] The Reglamento de Infracciones y Sanciones Sanitarias Pesqueras Acuícolas (RISSPA) has not yet been approved.

A.3.6. Dirección Regional de la Producción - DIREPRO

DIREPRO is the representation of PRODUCE in the regional governments. Since the decentralization process, the regional governments, had to assumed the leading role of the artisanal fisheries and aquaculture policy in the region (always in line with the national policy). They have power over the administration, supervision and control of artisanal fishing activity in the region, as well as control of the landing infrastructure and fisheries processing. They ensure compliance with regulations on the extraction of hydrobiological resources in the area of 5 miles. Regarding aquaculture, they are in charge of the environmental supervision and control of aquaculture activities regarding micro and small companies (< 150 gross tons/year).

A.3.7. Dirección General de Capitanías y Guardacostas - DICAPI

DICAPI is the authority in the maritime, fluvial and lake areas responsible for monitoring and sanctioning acts against the safety of people, the environment and the sustainability of hydrobiological resources. Port captain officers are responsible for registering vessel departures, monitoring the status of the crew and vessels, conducting surveillance operations at sea and penalize acts such as the fishing with illegal gear or the extraction of forbidden species.

A.3.8. Sistema Nacional de Acuicultura - SINACUI

The SINACUI aims to 1) guide, integrate, coordinate, execute, supervise, evaluate and guarantee the application and compliance of the public policies, plans, programs and actions oriented to promote the growth and development of the aquaculture at a national level; and to 2) promote aquaculture practices that contribute to the conservation and sustainable use of the environment where it is developed, in accordance with the regulatory framework in force. For this an intersectoral participation (within state institutions and between state institutions and users) is required.

The following institutions make up the SINACUI: PRODUCE, MINAM, DICAPI, SERNANP, OEFA (in charge of the environmental supervision and control of the aquaculture activities regarding medium and large company aquaculture activities), ANA (in charge of the supervision and control of the spills of the primary processing), PROMPERU, ITP, research institute of the Peruvian Amazon (IIAP), SANIPES, FONDEPES, DIREPRO and all the other entities and organisms developing activities regarding the research and promotion of aquaculture.

A.4. Private and Civil Society Institutions in Fisheries and Aquaculture

A.4.1. Sociedad Nacional de Pesquería - SNP

The National Fisheries Society is an organization that gathers 61 private enterprises devoted to the fishing and aquaculture industry. It is recognized by national state institutions as the legitimate representative and advocate of the industrial fishing interests. It was created in 1952 by a group of entrepreneurs with the aim of fostering the development of the fishmeal and fish oil emergent industry. Currently, it is devoted to channel the interests of their members, offer technical and legal advice to their associates, promote the research of fisheries, and propose norms and legal reforms for the development of fishing activities.[4]

A.4.2. Federación de Integración y Unificación de los Pescadores Artesanales del Perú - FIUPAP

The Federation of Integration and Unification of Peru´s Artisanal Fishers represents most of the social organizations of artisanal fishers in the country. FIUPAP is recognized by the national state institutions as the legitimate representative and advocate of the artisanal fishers and small-scale fishing and aquaculture interest. It was created in 1991 by a group of artisanal fishers of the marine environment from different regions with the aim of fostering the development and the promotion of artisanal activities and to defend their interests. Currently, it is devoted for the defense of their members' access to fisheries, the promotion of facilities for the development of their activities, and the proposal of norms and legal reforms in benefit of their members.

A.4.3. Organización Social de Pescadores Artesanales - OSPA

Social Organizations of Artisanal Fishers (OSPAs) represents local groups of artisanal fishers and fish farmers that gather around a variety of common interests. These organizations have different profiles regarding their aims, origins and representativity. Overall, they can be gathered in two general types: (i) those with a union nature, devoted mainly to the rights defense and that offer social assistance to their members; and (ii) those with a productive nature, devoted mainly to the joint development of productive activities or entrepreneurial initiatives. The OSPAs are recognized by the state as legitimate spokespersons of local fishers' groups.

It is important to highlight that the mentioned way for fishers to organize has not always been the only one. This way emerged as part of the government´s growing concern with making artisanal fishers visible to state regulatory and taxation practices. Reports from colonial

[4] According to their statute. Available online: https://snp.org.pe/wp-content/uploads/2016/06/ESTATUTO-FINAL-2011.pdf.

times, stated that fishers took advantage of their legal status as Indians to organize themselves as *gremios* and defend the access to their activity from other groups (Charney, 2001). Later, in the beginning of the 20th century, Fishers mutual aid associations were created with the aim to create a clearer and more direct line of organization between local fishing communities and a centralized Peruvian state. These associations cared for local ports, aided members in need, and served important religious functions. Afterwards, during the 1970s, with the aim to strength fishers´ relationship to a corporatist state, unions became the popular way of organizing (Viatori and Medina, 2019). However, in 2014, PRODUCE changed its approach and it was decided that artisanal fishers could no longer organize as unions but had to be reclassified as associations.

According to Viatori and Medina (2019) the reasons behind PRODUCE decision was that unions were organizations of workers within a company, and therefore artisanal fishers could no longer legally be one. In Chorrillos for example, this exacerbated divisions among fishers and other stakeholders such as tourist operators. This also created the possibility for fishers to organize in multiple associations, which allowed PRODUCE and other state agencies to shift from working to one to another depending on the understanding between them. Key informants of the region of Ica also stressed during the fieldwork phase in November and December 2019 the need to reestablish the unity among fishers in order to be able to fight for their rights and interests. According to the registry of social organization of artisanal fishers of PRODUCE and the Ministry of Foreign Trade, there are 1704 OSPAs in Peru (as of June 2020).

A.4.4. Organizaciones No-Gubernamentales - NGOs

Non-Governmental Organizations are nonprofit organizations whose main objective is the promotion of social development, and/or the protection of the marine and coastal environment. They are devoted mainly to research policy making, technical and financial assistance, and practical issues of conservation of coastal and marine environments. These organizations are diverse in terms of their origins, size, financial resources, level of operation and aims. Commonly they establish agreements of cooperation with key groups or individuals (state, civil society or business groups) according to the specific goals of their program. Some of the more relevante NGOs working in the marine-coastal environments of Peru are: Oceana, Pro Delphinus, The Nature Conservancy (TNC) and World Wide Fund for Nature (WWF).

B – FISHERIES GOVERNANCE

B.1. Legal Framework and Instruments

Fishing in Peru is currently regulated by the DL N° 25977 [1992] General Fisheries Law (GFL), published on December 1992 during the first government of A. Fujimori (1990-1995). This law aims to regulate the use of hydrobiological resources taken into consideration the optimization of the economy in balance with the conservation of biodiversity. The first management scheme of the GFL was issued through the DS N° 01-1994-PE in 1994 during the same government, but was replaced in 2001 by the DS N° 012-2001-PE during the government of Valentín Paniagua (Figure 4). Since their entry into force, they have been modified on various occasions. These norms seek to promote the sustainable development of fishing activities and are partially aligned with non-binding international instruments such as the FAO Code of Conduct for Responsible (FAO, 1995) or the fishing Capacity Management Plan (FAO, 2000).

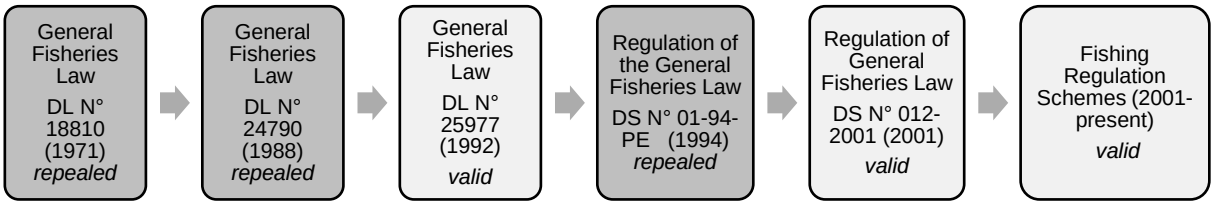

Figure 4. Timeline of Peruvian fisheries legislation. In dark grey the laws (i.e. the first two general fisheries law of the country) and the management schemes (i.e. the first management scheme of the current general fishing law) no longer in place. In light grey the laws and management schemes currently in place.

Elaborated by Isabel E. Gonzales

The GFL classifies fishing extraction into two main groups: *commercial* extraction, that is, for sale and purchase purposes; and *non-commercial*, which may be for scientific research, recreational fishing or for subsistence (for domestic consumption or barter, without profit)[5]. Within commercial fisheries, two types of fisheries are distinguished according to the capacity of the vessels and its level of mechanization: 1. *artisanal or small-scale* and 2. *large-scale* (also known as industrial fishing). It is considered artisanal when carried out by a natural or legal artisanal person with a vessel (i.e. embarked fisheries) or without vessels (i.e. non-embarked fisheries). In the case of embarked fisheries, the vessels must have a max 32.6 m^3 of hold capacity, up to 15m in length and the labor must be predominantly manual. Is considered small-scale fisheries when carried out with vessels of max 32.6 m^3 of hold capacity but that are equipped with modern equipment and fishing systems and whose extractive activity does

[5] Cap. II, art.20. GFL.

not have the status of artisanal fishing activity. 2. Is considered large-scale when fishing is carried out by vessels of more than 32.6 m3 of hold capacity (see annex I).[6]

The management scheme of the GFL states that both types of commercial fisheries must be regulated as separate units through fishing regulation schemes, known as ROP (*Reglamento de Ordenamiento Pesquero*). In general, the ROPs are for specific species (see Figure 5), and only in some cases they regulate a set of fisheries in specific territorial areas, such as ROPs for the Amazon, Tumbes and Titicaca basin. According to their objectives, the ROPs define the access to fishing, the capacity of the fleets, the fishing seasons, fishing quotas, minimum sizes, fishing gear and methods allowed, territorial restrictions, research requirements, and monitoring and surveillance actions. However, not all species/fisheries have a ROP; for those their fishery needs to be regulated by the rules contained in the management scheme of the GFL and other applicable provisions (art.3.). It is worth noting that although the GFL orders the development of ROPs, there is no criteria established to which species/fisheries should be prioritize, neither a deadline for PRODUCE to elaborate at least the ones of the main commercial fisheries.

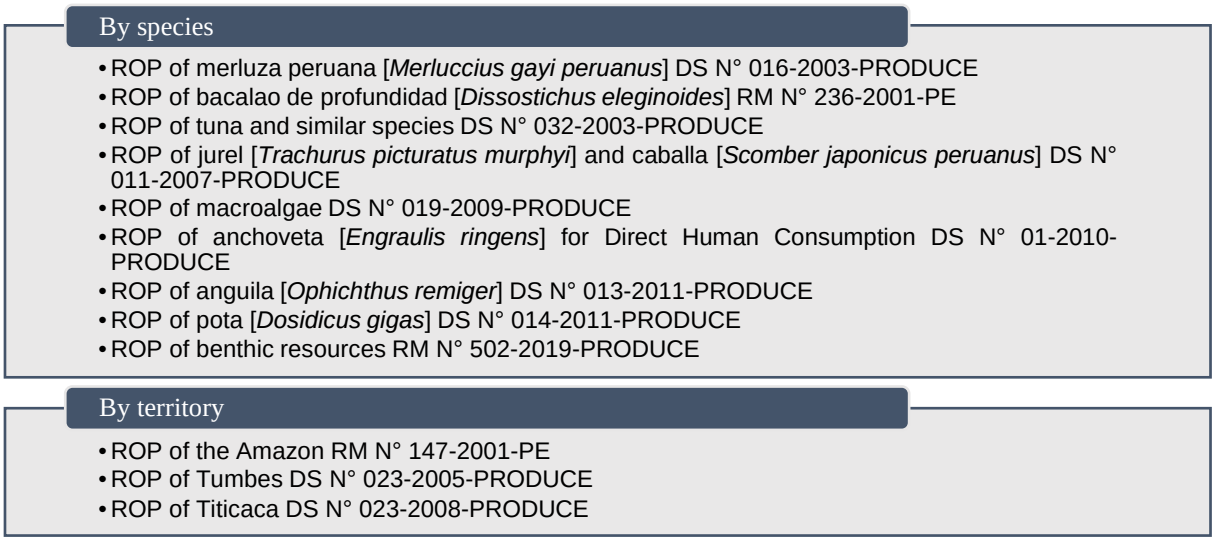

Figure 5. Type of fishing regulation schemes (ROP). Elaborated by Isabel E. Gonzales

As a fisheries management tool, the ROPs have been criticized in Peru for not having specific objectives and goals in line with the management they propose and for not following an ecosystem approach (Heck, 2015; SPDA, 2019a). It should be noted that with the approval of the DS N°012-2001-PE the ROPs replaced the figure of the fishing management plans known as PMP (*Planes de Manejo Pesquero*). The main difference between both two was precisely that

[6] DS N° 012-2001-PE

the PMP did propose clear objectives and goals that needed to be periodically evaluated by the Ministry of Fisheries[7] (today PRODUCE).

B.2. Fishing Access Regimes

The GFL established that the hydrobiological resources present in Peruvian waters are the property of the nation and their use, by both natural and legal persons, requires the granting of rights by the state. The rights are four types: 1) concession; 2) authorization; 3) permit; and 4) license. Regarding fishing, fishing *permits* authorize natural or legal persons to carry out the extraction of the hydrobiological resources in the marine-fishing environment. The *authorizations* apply to carry out extractive activities with research purposes, the installation of processing plants, and for fleet increase. The *concessions* are used to grant the administration and usufruct of the state´s artisanal fishing infrastructure. The *licenses* authorize the fishing processing plants. Of all these four, authorizations and permits regulate the access to artisanal fishing. Of all these four, authorizations and concessions regulate the access to aquaculture activities (further explained in section C). The four types of rights are subjected to payments except for research activities or artisanal or subsistence fishing[8] (see Table 2).

Table 2. Types of access rights to fishing, aquaculture and fishing infrastructure.

	Permit	License	Authorization	Concession
Fishing	Boat operation.	-	For fleet increase. For research.	-
Aquaculture	-	-	In private land.	On public land, inland and marine water floors.
Fishing Infrastructures	-	Processing plant operation.	Installation of industrial processing establishment.	Administration and usufruct of public docks.

Source: DS N° 012-2001-PE; Elaborated by Isabel E. Gonzales

The fishing regulation of the resources depends on their level of exploitation which is define after the scientific studies and technical reports carried out by IMARPE. The levels are the following: *unexploited* (i.e. those in which there is no exploitation); *underexploited* (i.e. when there are surpluses despite exploitation); *fully exploited* (i.e. when the maximum sustainable yield of the resource is reached). Moreover, resources can also be declared *under recovery* (i.e. in the event that a resource is affected by the impact of adverse biological and oceanographic conditions on its ecosystem)[9] (art.9.). However, in the latest case, the law also established the conditions for the exploitation of this type of resources under a provisional regime;

[7] art.13. DS N° 01-1994-PE
[8] Título VI GFL.
[9] art.8. Management scheme GFL.

and as with the definition of types of fisheries (see subsection B.6.1.) this vague definition opened the door to use this "legal trap" to extract the resources (Gutiérrez and Suerio, 2017). It is important to highlight that the status of overexploitation was not included in the second regulation of the GFL (DS N° 012-2001-PE), but it was considered in the first one (DS N° 01-1994-PE). The assignment of these classifications to a given fishery is established in the species-specific ROPs, but considering that not all species have one, the management scheme of the GFL establishes general guidelines (see Table 3).

Table 3. Classification of fisheries by level of exploitation and access ways.

Classification	Access to fisheries
Unexploited resources	The Ministry of Fisheries, today PRODUCE, will promote the investigation of such resources through exploratory and experimental fishing. In this scenario, the right to freely dispose of the fishery product may be enjoyed. Those fishing activities can only be done in a 6-month period and it exists the possibility to renovate once for another 6 months always prior approval from IMARPE.
Underexploited resources *Also opportunity and highly migratory resources	The increase of fleet size is authorized[10]. Fishing permits can be granted.
Fully exploited	Cease of the fleet increase authorizations and cease of fishing permits. Except in the event that the fleet size changes without changing the hold capacity. Only applicable for large- and small-scale vessels, or vessel with hold capacity of up to 32.6m^3 with modern systems and equipment whose extractive activity does not have the condition or artisanal fishing activity.

Source: DL N° 25977 [1992]; Elaborated by María Garteizgogeascoa

The process for obtaining an *artisanal fishing permit and artisanal fishing vessel permit* in the marine environment is carried out in the DIREPRO of the corresponding jurisdiction (i.e. the respective region, with exception of Lima Metropolitana). To get and *artisanal fishers permit* the procedure consist of the following steps: (i) send an application addressed to the DIREPRO, (ii) a copy of the identity document, (iii) a certificate of affiliation to an OSPA, (iv) and pay a handling fee; additionally, embarked fishermen must (v) send a copy of the vessel's number of registry (*certificado de matricula*), and (vi) a copy of the sanitary protocol of the vessel. (These standard requirements are subject to some variation at the discretion of responsible DIREPRO.)

To obtain the *artisanal fishing vessel permit* the procedure consists of the following (Figure 6): (i) send an application to the General Directorate of Artisanal Fishing (PRODUCE), (ii) present the vessels´number of registry where the hold capacity in m^3 is specified (except

[10] However, the DS N°006-2015-PRODUCE prohibits the construction of any type of fishing vessel, except for replacement of another discharged or damaged one. Despite this, there is evidence of an increase unauthorized hold capacity as well as the illegal construction of boats of the artisanal and small-scale fleets (Gutiérrez and Suerio, 2017)

for vessels with a gross tonnage of less 6.48), (iii) obtain sanitary certification (i.e. proving to have followed the respective protocol) from SANIPES, (iv) present the documentation that proves the possession or legal ownership of and artisanal vessel, and (v) present the vessel owner certificate[11].

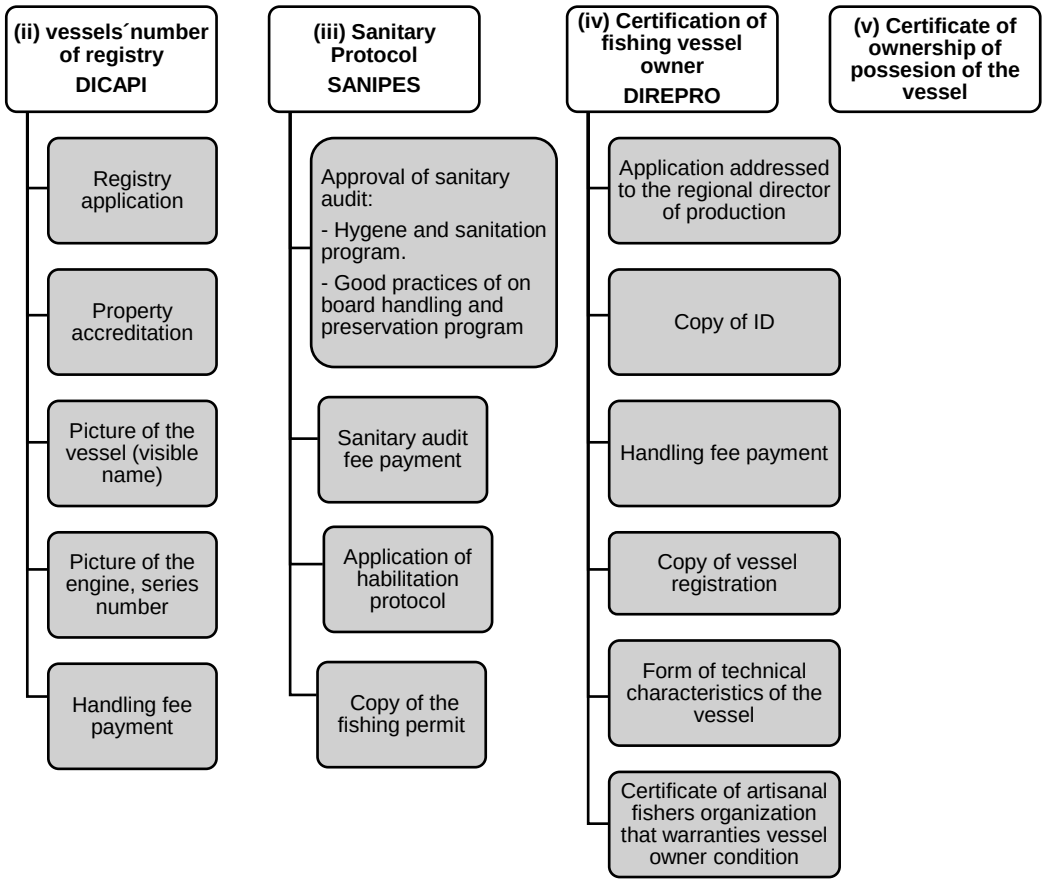

Figure 6. General requirements to obtain an artisanal fishing vessel permit.

Source: Texto Único de Procedimientos Administrativos – TUPA DIREPRO – Piura, TUPA DIREPRO – ICA.; Elaborated by Isabel E. Gonzales

The access to this right depends on the obtention of other permits and certificates issued by other institutions such as SANIPES and DICAPI, which have their own procedures and requirements[12].

More succinctly, the process for obtaining an industrial permit in the marine environment is carried out in PRODUCE based in the capital city, Lima. In the case of the anchoveta [*Engraulis ringens*] and sardine [*Sardinops sagax*], it is important to stress that access is closed

[11] TUPA DIREPRO Piura. Again, there is some regional variation to these requirements.
[12] Fishing permits for artisanal fisheries are usually valid for fishing every species, with the exception of those species that have a current ROP. Also, most fishing permits for artisanal fishers also exclude the payment for rights of extraction.

since the species were declared as fully exploited in 1997 (RM N° 781-1997-PE). Access for large-scale or industrial vessels is granted by an authorization for fleet increase, but it only applies for the substitution of already existing vessels with equal hold capacity - although over 600 vessels were released from this requirement and admitted in a closed list of formal industrial vessels in 1998 (DL N° 26920 [1998]). In this extractive category, permits for fishing anchoveta are granted through the allocation of an individual vessel quota (see subsection B.3.1). The permit is assigned among formal industrial vessels considering their record of extraction and the overall anchoveta fishing quota. Due to the closure anchoveta fishery, the only way of getting formal access at the present time is through the purchase of an already authorized vessels. Fishing permit holders or owners of industrial vessel must pay a fee for the right of extraction, which is 0.43% of the Free on board (FOB) value per ton of fishmeal (DS N° 007-2019-PRODUCE).

B.3. Extraction Restrictions

The overexploitation of fisheries is a global phenomenon in which many fish stocks are immersed and as a consequence entire related marine ecosystem are being negatively affected; overfishing is accompanied, among many other effects, with habitat destruction, changes in species abundance and diversity, and ecosystem function and structure disruption due to changes in trophic networks. In this, Peru is no exception; the fishing exploitation of at least 100 marine species and has been recognized[13].Therefore, in the following subsections we will present the past and present restrictions to the fisheries of those species that due to its scientifically recognized vulnerable ecological status have been subjected to a serious of regulations aiming at increasing their sustainability.

B.3.1. Fishing quotas – the case of the anchoveta

In the coast of Peru there are two out of three anchoveta population stocks: the northern anchoveta stock (between 3°S and 15°S in northern Peru) and the southern anchoveta stock (from 15°S to the southern limit of the Peruvian maritime domain, also exploited by Chile) (Pauly and Tsukayama, 1987; Cirke, 2005). The regulations for the management of both stocks has considered their differences, with greater attention towards the north central zone, which is the most extensive and which historically has had the highest level of exploitation (Kroetz et al., 2016). The southern stock has been managed with fewer restrictions and regulations due to difficulties in coordinating the management with Chile.

[13] http://www.minam.gob.pe/esda/11-2-1-situacion-de-los-principales-recursos-pesqueros-e-hidrobiologicos-especies-en-peligro-de-extincion-especies-exoticas-introducidas-estadisticas-y-estudios-al-respecto-estado-general-de-las-p/

As mentioned before, these stocks are vital for the production of fishmeal and fish oil. This idea of transforming Peruvian waters in a fishmeal industry came up for the first time from the producers of bird guano grouped under the Guano Administration Company. Guano production was an activity that *boom* during the 19th century and that relied on deposits from living birds whose primary source of food were different species of pelagic fish, especially anchoveta. However, at the end of 1930s the guano industry was in crisis and the Guano Administration Company came up with the idea to exploit a lower level of the Humboldt Current food chain, the anchoveta, and produce fishmeal. Moreover, the exclusively right to fish anchoveta and a loan to build a fishmeal plant were granted to the Guano Administration Company. Yet, the plan was never materialized. Interestingly, the first time that fishmeal was produced in Peru was with the use of bonito scraps as a result of the decrease in exports after the II World War; during this period, Peru had taken over the American market of canned tuna by exporting canned bonito but when the war finished, the government of the United States prohibited the labelling of bonito as tuna (Viatori and Medina, 2019 p. 43). When bonito was not abundant, other fish species (like anchoveta) were used. Since then, Peru´s anchoveta fisheries switched from capturing it for food (i.e. direct human consumption - DHC) to capturing it for fishmeal/fish oil production (i.e. indirect human consumption - IHC). This was possible mainly because of 1) the presence of cheap coastal labor as a direct consequence of an agriculture crisis in the highlands that led workers to migrate to the coast in search of work opportunities; 2) that the anchoveta populations could be found very close to the shore which made the stocks very accessible with the at that time available boat technology; and 3) national pro-export policies (Viatori and Medina, 2019 p. 44-45).

In the 1950s Peru became the largest exporter of fish in the world. But by the mid-1960s the anchoveta stocks were showing signs of overfishing and the mismatch between the growing supply of fishmeal and the inability of the international demand to keep the growing pace resulted in indebtedness and bankruptcy of parts of the industry. In 1965 the newly created IMARPE partnered with the Food and Agriculture Organization of the United Nations (FAO) in a mission to analyze the anchoveta stocks. The study concluded that the anchoveta was fully exploited and at risk of not being able to recover (Clark, 1976). IMARPE made recommendations to implement the country's first closed season. That same year, the government, for the first time in Peru since the anchoveta industry had started, implemented a series of actions aiming at controlling the predation of the resource; among them: a limitation on the number of fishing days (i.e. the establishment of "fishing weeks") and a Total Allowable Catch – TAC (LMCTP) for the entire fleet (at that time the GFL, with its distinction between different fleets, was not yet implemented) of approximately 7M tons for 1965 (IMARPE, 1965). In prac-

tice catches exceeded the scientifically recommended quota because 1) the enforcement system was not strong enough; 2) the fleet size and the holding capacity kept growing; and 3) with the implementation of TAC a shorter fishing season was implied (from 270 days in 1986 to 50 in 2007[14]); however, few boat owners could afford to tie up their boats when processing plants were demanding product to satisfy the international demand. Therefore, these policies ended up promoting an "Olympic race" (i.e. referring to the competition between vessels fishing as much resource as possible in the shortest time possible). From the onset off, all this generated the existence of efficiency problems in the industry since the fleet and the holding capacity of vessels and processing plants surpassed the availability of resource (IMARPE, 1970)[15].

In 1968, the military led by Velasco Alvarado overthrew the government. Velasco set out to more closely regulate the anchoveta stocks; as a result, a number of laws aiming to restructure the fishery industry passed and the Ministry of Fisheries (today PRODUCE) was created. In 1972-1973 an ENSO event combined with the past decade of overfishing led to the collapse of the anchoveta population (Aranda, 2009). This was the beginning of a long period of recession in the catch volumes of anchoveta that did not recover until 1990s (Glantz, 1979; Arias Schreiber, 2012). In 1973, a moratorium on anchoveta fishing was imposed for most of the country, the four largest companies were nationalized and the *Empresa Nacional Pesquera Pesca Perú SA* (known as Pesca-Peru) was created. Moreover, the fishing and processing capacities were reduced (the number of registered boats was halved and roughly the same percentage of industry´s workers were laid off), and it was forbidden to build or renew fishing vessels (Viatori and Medina, 2019 p.47) with the aim of preventing the anchoveta industry from collapse and ensuring its future profitability. However, in 1975 the general Morales Bermúdez overthrew Velasco and started the process of re-privatization of the anchoveta industry which culminated in the 1990s under the presidency of Alberto Fujimori (1990-2000) with the privatization of Pesca-Peru.

In the 1980s, almost a decade after the anchoveta crisis, although the anchoveta stocks were showing signs of improvement they were still not rebounding; the fishing of new species such as the Pacific sardine [*Sardinops sagax*] was encouraged. This resulted in an expansion of overfishing practices to many other species. On top of that, in 1982-1983 another ENSO phenomenon led to further anchoveta stocks declines and throughout the 1980s anchoveta (and other species) fishing seasons were continually affected by closures. In 1990, Alberto Fujimori entered the presidential office and organized large-scale re-privatization processes for the sake of "efficiency"; in the following decade a number of neoliberal policies were

[14] https://www.actualidadambiental.pe/historia-y-balance-como-se-ha-manejado-la-pesca-de-anchoveta-en-el-peru/
[15] See also footnote 14 above.

implemented (Aranda, 2009; Ibarra et al., 2000); the government transferred to private hands the exclusive right to join a highly profitable activity that bases its activity on the exploitation of common property national renewable natural resources and thus lost a significant source of potential revenue. At this point everything (e.g. fleet, the processing plants) was private and the pelagic stocks were recovering so the private sector found the optimal conditions to invest in new vessels and modernization of plants. The fleet expanded even more (Viatori and Medina, 2019 p.52).

1992 is the year in which the current GFL (DL N° 25977 [1992]) was issued and when the management of the anchoveta fisheries starts getting more complicated. As mentioned, the enactment of the GFL implied a distinction of different fleets (i.e. artisanal and small-scale and large-scale). However, how this type of fleets, and therefore fisheries, are defined changed from the first management scheme of the law (approved in 1994) to the current one (approved in 2001). The first one defined the commercial marine artisanal and small-scale fisheries as the one carried out without boats and the one carried out with boats of up to 30 metric tons of hold capacity; and large-scale fishery as the one carried out by vessels of more than 30 metric tons of hold capacity (note that it is not the actual 32.6m^3). Another important point established with the GFL was the distinction of hydrobiological products into those destined for direct human consumption (DHC) and for indirect human consumption (IHC) (art.22.). The GFL also required that owners decommission old boats before new ones could be commissioned (for the anchoveta). However, this was not a requirement for the commission of vessels for other species which at the end were used to access the anchoveta fishery.

The GFL was the first legislation to define ‘artisanal fishery’. However, authors have pointed to the double standards of the government; on one hand implementing neoliberal policies to benefit private interest and on the other hand adding some populist measures looking for support from the country´s poor. In 1992, another decree was approved that established the exclusivity of fishing in the 0 – 5 nautical miles to the artisanal/small-scale fleet (but keeping in mind the definition that was on place in 1992 which is not the current one) and prohibited the use of purse seine nets in this zone (DS N° 017-1992-PE). The large-scale fleet did not oppose this norm probably because it came with a low likelihood of enforcement due to lack of resources and funding. Although these measures have been historically used as the legal bases for advocating for artisanal fishers´ rights they ignore the fact that artisanal fisheries not only fish in nearshore waters (the ones most polluted at that time as a consequence of the sewage of the fishmeal processing plants) (Viatori and Medina, 2019 p.52-53).

In 1998 the DL N° 26920 [1998] was enacted. This law aimed to formalize the fisheries activity by establishing that the owners of wooden vessels with a hold capacity of up to 110m^3 and that had been practicing the activity could ask for a fishing permit without the need to be

authorized for the increasing of the fleet. This fleet started to be known as *Vikingas*. In 2000, the fleet targeting anchoveta was five times larger than needed to catch the TAC (Viatori and Medina, 2019, p.54). In 2001, with the DS N° 012-2001-PE the definition of the artisanal/small-scale and large-scale fisheries changed (as mentioned above).

Focusing on the historical development of what today is a key mechanism regulating the fishing access of anchoveta for IHC, the individual vessel quota (IVQ), we see that in 1992, the World Bank promoted the implementation of a system of individual transferable quotas (ITQ) similar to those that had already been operative in Iceland, New Zealand and Canada for some decades (Young and Lankester, 2013). However, it was not appealing for the Peruvian government or boat owners connected to fishmeal production. Years later, the proposal was still at the center of discussion; for instance, in 2002, the Vice-Ministry of Fisheries (former Ministry of Fisheries) proposed the introduction of an ITQ system in the fishery for anchoveta and sardine and in 2003 a new fisheries administration confirmed to the local media the government's willingness to implement an ITQ scheme from 2004.

In June 2008, the government finally took the decision to introduce an IVQ system- IVQ (LMCE). During Alan García Pérez´s second term as president (2006-2011); the DL N° 1084 [2008] (*Ley sobre límites máximos de captura por embarcación*) was enacted. The quotas were granted to fish anchoveta for IHC between the northern limit with Ecuador and parallel 16° S, and outside the reserve areas for the artisanal and small-scale fleet. In the second season of that same year, the system was extended to the southern zone. This system was distinguished from the one initially proposed by the World Bank (i.e. ITQ) with respect to tradability of fishing rights (Aranda, 2009). Unlike ITQ that can be sold and bought, accumulated and relocated to other vessels, IVQ are attached to the vessel itself and the fishing license; they are only awarded to authorized boats and the only way to access them is through the purchase of an authorized vessel. In the Peruvian case, the quotas were awarded differently for the large-scale vessels and the *Vikinga* fleet. For the former, 60% of the quota is estimated from the best catching year since 2004 and the remaining 40% from the licensed hold capacity of the vessel. For the latter, 100% of the quota is estimated based on the best year of catches since 2004. The DL N° 1084 [2008] does not clearly specify the rationale behind the decision to use different criteria for the two fleets (Aranda, 2009) but there were disagreements between the National Society of Fisheries (SNP; the most representative association for the large-scale sector) and the National Association of Boatowners of the Law 26920 [1998] (*Asociación nacional de armadores pesqueros ley 26920*; the most representative association of the *Vikinga* fleet) (Viatori and Medina, 2019 p.54). The National Society of Fisheries supported the implementation of IVQ while the National Association of Boatowners preferred a vessel buy-back scheme (Aranda, 2009). For both cases, the IVQ is the result of multiplying the share by

the TAC recommended for each fishing season by IMARPE. The IVQ is flexible as it is subject to re-adjustments based on the catches recorded by the vessels over time and that, if not used at least once every two years, can be reversed by PRODUCE.

The IVQ system did not include any measure for mandatory or voluntary boat decommissioning, effectively maintaining the Peruvian fleet capacity. If a given boat owner decides to decommission a boat, its rights can be added onto other boats belonging to the same owner. The payment for the IVQ is particular for the anchoveta of IHC; taxes are not assigned on the weight of the extraction or capture but on the weight of processed product in FOB. In July 2019 it was established that the payment for the IVQ for anchoveta of IHC will be calculated on the basis of applying 0.43% of the FOB value of fishmeal[16].

The IVQ system together with the relatively good status of the anchoveta stocks and the increasing demand for fishmeal/fish oil and its price, encouraged small-scale and artisanal fishers to illegally harvest anchoveta for fishmeal within the five nautical miles to sell it to the black-market. As we have mentioned, since the production of fishmeal/fish oil became very relevant for the Peruvian market economy, the fishing of anchoveta started to be regulated differently depending on its final destination. But it was not until 2010 when the first ROP of the resource of anchoveta for DHC was approved (DS N° 010-2010-PRODUCE); this management scheme was also regulating the extraction of another type of anchoveta, samasa [*Anchoa nasus*].

In 2012, under the presidency of Humala (2011-2016) and for the first time in history, the minister of PRODUCE was not someone from the fishmeal industry. As a result, the DS N° 005-2012 aiming to develop a domestic market for anchoveta as food fish was enacted. This DS changed the definition for artisanal and small-scale fisheries of the GFL; the artisanal fleet is the one of no more than 10m^3 of hold capacity with manual work and the small-scale fleet is the one of 10-32.5m^3 of hold capacity, no more than 15m in length and preferably equipped with modern equipment and fishing systems and whose extractive activity does not have the status of artisanal fishing activity. The main regulation was that the artisanal fleet (i.e. <10 m^3) could exclusively fish anchoveta for DHC in the first 5 miles; the wooden purse seines (*boliches*. i.e. 10-32.5m^3) could not fish anchoveta closer than 5 nautical miles and only 10% of their catches were licensed for fishmeal (the rest had to go to canning). The large industrial fleet (i.e > 32.5m^3) could not fish closer than ten nautical miles for anchoveta that would be processed into fishmeal. This DS was accused to be unconstitutional by the industrialists (led by the National Society of Fisheries) and indeed, in November 2013, Peru´s Supreme Court

[16] https://www.gob.pe/institucion/produce/noticias/45559-ministerio-de-la-produccion-fija-nuevos-valores-para-los-derechos-de-pesca-del-recurso-anchoveta

declared the DS N° 005-2012 unconstitutional arguing that the reservation of areas was a violation of the art.9. of the GFL (i.e. new regulations have to be based on clear scientific data and socioeconomic factors) as this data had not been provided. As a response, PRODUCE issued several other DS (e.g. DS N° 011-2013) to try to reassert the geographical limits. However, this fight came to an end in 2016 with the election of a new government which again aimed to benefit the fishmeal industry. That same year, PRODUCE pre-published a project for a new ROP for DHC anchoveta.

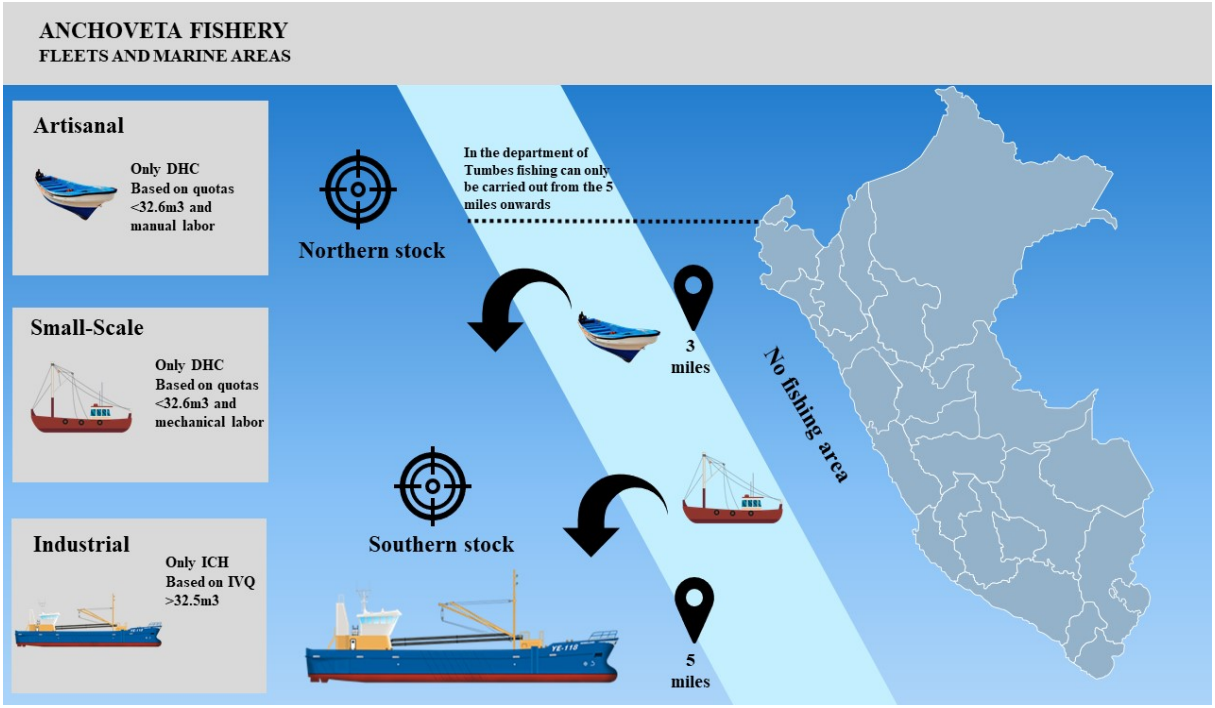

Figure 7. Summary of the anchoveta fishery according to fleets and marine areas. Nowadays generally the industrial fleet can only fish anchoveta for indirect human consumption (i.e. fishmeal/ fish oil) from five miles onwards; while the artisanal and small-scale fleet can only fish for direct human consumption from the three miles onwards. The fishing of anchoveta is not legally allow within 3 miles. The mentioned regulations do not apply to the Tumbes coast; in this case, the fishing of anchoveta can only be carried out 5 miles onwards.

Source: adaptated from Peru Oceana[17]; elaborated by María Garteizgogeascoa

The project aimed to: (i) again redefined the artisanal and small-scale fleet; now with criteria that do not focus on the size of the fleet or the hold capacity but that are based on the use or not of mechanized means to carry out the fishing operations; (ii) forbid the fishing of anchoveta in the first 3 nautical miles to any fleet; and (iii) obligatory implementation of satellite systems in the DHC fleet[18]. In 2017 these became enacted under the new ROP for anchoveta for DHC

[17] https://peru.oceana.org/es/blog/claves-para-entender-el-manejo-de-la-pesqueria-de-anchoveta
[18] https://peru.oceana.org/es/blog/nuevas-reglas-para-la-pesqueria-de-anchoveta-de-consumo-humano-directo-aciertos-y-mejoras

(DS N° 005-2017-PRODUCE). Furthermore, with its approval for the first time a quota for anchoveta for DHC was granted. Before the artisanal and small-scale fleet could fish anchoveta for DHC throughout the year without limits[19]. Currently the ROP establishes that artisanal or smaller-scale vessels – must operate outside the 3 nautical miles (see Figure 7, above).

B.3.2. Fishing quotas – the case of other species

As shown in Table 4, in addition to the anchoveta for IHC other species for which a total allowable catch (TAC) was defined are: the hammerhead shark – tiburón martillo [*Sphyrna zygaena*], eel- anguila [*Ophichthus remiger*], bigeye tune – atún patudo [*Thunnus obesus*], cod of the deep – bacalao de profundidad [*Dissostichus eleginoides*], mackerel – caballa and jurel respectively [*Scomber japonicus peruanus*; *Trachurus picturatus murphyi*], Peruvian hake – merluza peruana [*Merluccius gayi peruanus*], species of kelp - aracanto [*Lessonia trabeculata*], eastern Pacific bonito - bonito [*Sarda chiliensis chiliensis*]. From those, the species with current ROPs are five: Peruvian hake, cod of the deep, mackerel, anchoveta and eel. But of these only the Peruvian hake and the anchoveta (for IHC) have IVQ. In some cases, the TAC applies to all types of vessels (as is the case of the mackerels), i.e. being accessible to all fishing fleets. In others, the quota is specific to a single fishing fleet, for example the species of kelp, whose quota is restricted to the artisanal fishing fleet.

Table 4. Species for which an access regime based on a total allowable catch (TAC) and/or individual vessel quota (IVQ) systems were defined. IHD = Indirect human consumption, DHC = Direct human consumption.

Species	TAC system	IVQ System
Anchoveta [*Engraulis ringens*] IHC	✓	✓
Anchoveta [*Engraulis ringens*] DHC	✓	
Pota [*Dosidicus gigas*]	✓	
Bacalao de profundidad [*Dissostichus eleginoides*]	✓	
Merluza peruana [*Merluccius gayi peruanus*]	✓	✓
Atún patudo [*Thunnus obesus*]		
Jurel [*Trachurus picturatus murphyi*]	✓	
Caballa [*Scomber japonicus peruanus*]	✓	
Anguila [*Ophichthus remiger*]	✓	
Tiburón martillo [*Sphyrna zygaena*]	✓	
Aracanto [*Lessonia trabeculata*]	✓	
Bonito [*Sarda chiliensis chiliensis*]	✓	
Macroalgae		

Source: MardelPeru[20]; Elaborated by Isabel E. Gonzales

Most of the time, the establishment of the quotas is a domestic matter in which only the competent state institutions have interferences, however, in a few cases the establishment of the

[19] https://peru.oceana.org/es/blog/claves-para-entender-el-manejo-de-la-pesqueria-de-anchoveta
[20] https://www.mardelperu.pe/pesca/3/reglas-de-juego-en-el-sector-pesca

quotas responds to a supranational organization to which the country is attached. This would be the case of the Atún Tropical. The Inter American Tropical Tuna Commission (CIAT) establishes a global fishing quota that is distributed among each of the 18-member countries. Then this national quota is distributed to users by each state through public competition; the winners of the fishing rights are those who offer the highest value per ton of catch. It is also the case of the bacalao de profundidad [*Dissostichus eleginoides*], which is managed under the Commission for the Conservation of Antarctic Marine Living Resources (CCRVMA) to which Peru is not a member and has not sign the agreement. Finally, it is also the case of the jurel [*Trachurus picturatus murphyi*]. The management for this species is currently under the South Pacific Regional Fisheries Management Organization (SPRFMO) and the Peruvian government.

This resource is highly migratory and therefore is distributed among many fishing areas; both national and international waters. In the early 2000s Chile was worried about the sustainability of this resource, which constitutes one of its most important fisheries, and tried that Ecuador, Peru and Colombia (with which the *Comisión Permanente del Pacífico Sur* is formed), implement strict measures that impede or hinder the operation of foreign fleets that were carrying out IUU (i.e. illegal, unreported and unregulated). However, any measures were agreed, and in 2006 Chile decided to find support in other countries such as Australia and New Zealand; this way the formation of the SPRFMO started. In the first meetings Peru was not involved, and it was in 2007 when the National Fisheries Association (SNP) took part in one of the meetings and realized the importance of being an active member of SPRFMO; as the sovereignty of the management of this resource was at risk. As a result, Peru created a technical working group formed by IMARPE, PRODUCE, DICAPI and the SNP.

There are three main conflicts between Peru and the other countries of SPRFMO: First, Peru declared the existence of two different stocks of jurel [*Trachurus picturatus murphyi*]; one in what would be its exclusive economic zone (EEZ) and its surrounding high seas; and a second one in Chile and its high seas. Here, it is important to consider that Peru has not signed the United Nations Convention on the Law of the Sea (UNCLOS). Both the constitution of the Republic (art.54.) and the GFL (art.7.) state that the fishing laws are applicable beyond the 200-miles zone in accordance with international agreements. In contrast, the other countries (apart from Russia that declared the existence of four stocks) supported the idea of the existence of one single stock. Second, the rest of the countries defended that the establishment of the annual quotas had to be based on the historic fishing records of the vessels that would have traditionally fished in the high seas of the South Pacific. However, Peru felt it was at a disadvantage as it did not have jurel [*Trachurus picturatus murphyi*] fishing fleet for the high seas. Third, the intention of the SPRFMO was to regulate the resource in what they called “entire range of action” which included areas of national jurisdiction; constituting in the eyes of

the Peruvian state a clear violation of the sovereignty of the coastal nation. Peru strongly opposed the formulation but was left alone in its political stance (Ecuador and Colombia never had a leading role and Chile aligned with the position of the other countries for strategic convenience). However, Peru made the cessation of sovereignty over its jurisdictional waters (art.20 of the SPRFMO convention) dependent on its explicit consent:

> "Con el consentimiento expreso del Estado costero parte o partes concernido, la Comisión puede establecer de acuerdo con el Anexo III de esta Convención, según corresponda una cuota total de captura o un esfuerzo máximo permisible que aplique a todo el rango de distribución del recurso pesquero.
>
> En caso que uno o más de los Estados costeros partes no consienta que una cuota total de captura o un esfuerzo pesquero máximo permisible se aplique a todo el rango de distribución del recurso pesquero, la Comisión puede establecer según corresponda, una cuota total de captura o un esfuerzo pesquero máximo permisible que aplique en las áreas de jurisdicción nacional de los Estados costeros parte o partes que sí dieron su consentimiento y en el área de la Convención."

In this way Peru preferred to renounce the fishing it had carried out in its jurisdictional waters to be counted for the determination of the quota, rather than relinquishing its sovereignty and allowing those measure to be applied therein (Inurritegui and Mutsios, 2019).

B.3.3. Minimum catch sizes and maximum tolerance index

The minimum catch size refers to the minimum size with which a certain species is considered to have reached maturity, having had the opportunity to spawn at least once. The definition of minimum catch size aims to facilitate the sustainable exploitation of marine resources by constituting a parameter based on the average spawning size to allow the reproduction and renewal of the species. These measures are defined based on scientific studies carried out by IMARPE. In most cases the minimum sized are expressed in units of length, the exception being the case of the octopus whose size is expressed in weight.

The minimum catch size is the basis for defining the characteristics of the length of the nets that must be used according to the target species and the fishing gear, with the aim to achieve the greatest selectivity as possible during the catch (see Table 5). Considering the difficulty of this, the regulations consider a maximum tolerance index of juveniles that define the maximum allowable percentage of bycatch. In general, the permitted bycatch rates are between 10 and 20%, with the exception of the mackerels (caballa [*Scomber japonicus*] and jurel [*Trachurus murphyi*]) which is set at 30%.

B.3.4. Exclusion zones

The exclusion or reserve zones, are areas in which a certain type of extraction is restricted: this could be either the artisanal, small-scale, or large-scale fishing fleet or the use of certain gears or fishing practices.

B.3.4.1. Exclusion zones by type of fishing: artisanal, small-scale and large-scale

The creation of fishing exclusion zones in Peru dates back to the first decades of the 19th century. One of the first restrictions was established by the Guano Administration Company in 1916. It prohibited fishing boats from approaching *guaneras* islands at distances less than one mile; a distance that was extended to two miles in 1922 in order to preserve in good conditions the habitat of the guano birds and therefore to maintain the production of fertilizers[21].

Table 5. Overview of fishing gears, corresponding targeted species and respectively established minimum sizes for the Peruvian fishery.

Fishing gear	Species	Minimum fishing net size
Purse seine (*cerco*, *boliche*)	Anchoveta [*Engraulis ringens*]	13 mm (½ in.)
	Sardina [*Sardinops sagax*]	38 mm (1 ½ in.)
	Jurel [*Trachurus picturatus murphyi*], Caballa [*Scomber japonicus peruanus*]	38 mm (1 ½ in.)
	Lorna [*Sciaena deliciosa*], Cabinza [*Isacia conceptionis*], Machete [*Ethmidium maculatum*], Lisa [*Mugil cephalus*]	38 mm (1 ½ in.)
	Bonito [*Sarda chiliensis chiliensis*], Cojinova [*Seriolella violacea guichenot*], Sierra [*Pristis pristis*][22]	76 mm (3 in.)
	Atunes	110 mm
	Barriletes [*Katsuwonus pelamis*]	110 mm
Gill nets (*cortina*)	Pejerrey [*Odontesthes regia*]	38 mm (1 ½ in.)
	Lorna [*Sciaena deliciosa*], Cabinza [*Isacia conceptionis*], Machete [*Ethmidium maculatum*], Lisa [*Mugil cephalus*]	38 mm (1 ½ in.)
	Sardina [*Sardinops sagax*]	38 mm (1 ½ in.)
	Tiburones	200 - 330 mm
	Raya águila, raya manta, raya basha	200 – 330 mm
	Lenguado común [*Paralichthys adspersus*]	120 – 145 mm
Trawl nets (*red de arrastre*)	Merluza peruana [*Merluccius gayi peruanus*], and accompanying bottom fauna	110 mm
	Jurel [*Trachurus picturatus murphyi*], Caballa [*Scomber japonicus peruanus*]	76 mm (3 in.)
	Langostinos	38 mm (1 ½ in.)

Source: RM N° 209-2001-PE; elaborated by Isabel E. Gonzales

Currently the first 5 miles of the Peruvian coast have an exclusion regime that aims to protect the upwelling zones and the reproductive areas of the hydrobiological resources. In September 1992, the DS N° 017-1992-PE, established that the area between 0 and 5 nautical miles would

[21] RS 2 May 1916. Prohibición a los botes pesqueros de acercarse a las islas guaneras, a distancia menor de una milla.
[22] The fishery of sierra [Pristis pristis] has been forbidden https://larepublica.pe/economia/2020/02/07/produce-prohibe-pesca-de-pez-sierra-ante-posible-despoblacion-imarpe/

be declared a zone of protection of flora and fauna, prohibiting fishing with purse seines (either for DHC and IHC) and other fishing gears that could modify the bioecological conditions of the environment. Endorsing this rule, the management scheme of the 1994 GFL (DS N° 01-1994-PE) established that the first 5 nautical miles would be reserved for artisanal and small-scale fishing, prohibiting the exercise of fishing from the large-scale fleet. Within this area, the use of fishing gear that could alter the conditions of the environment (in particular [bottom] trawls and mechanized beach seines) were forbidden. Later, the new management scheme of 2001, indicated that large-scale vessels could eventually extract resources within 5 miles following IMARPE evaluation[23] and that the use of artisanal purse seines was feasible, with the exception of the coastal area of Tumbes.

A special mention should be made to the coastal area of the department of Tumbes, which has had its own ROP since 2005 (DS N° 023-2005-PRODUCE). The ROP regulates small-scale and artisanal extractive activities in the maritime area adjacent to the department and limits the activity inside the 5 nautical miles. More specifically, in the 5 nautical miles fisheries can only make use of selective gear and fishing practices (such as gill nets, cast nets, hand lines, long lines, traps, harpoon, diving, hunt and gathering). At the same, it excludes the use of purse seines for both artisanal and small-scale vessels, being an exemption to what is established by the ROP for the anchoveta to DHC.

B.3.4.2. Spatial exclusion: conservation exclusion zones and protected areas

Currently there are three national reserves that include marine areas: the Paracas national reserve (1975), the national reserve Sistema de Islas, Islotes y Puntas Guaneras (2009) and the San Fernando national reserve (2011). In addition, there are two proposals to create the national reserve Mar Tropical de Grau, which would include 4 areas located off the coast of Tumbes and Piura and would occupy an area of approximately 116,000 ha[24], and the national reserve Dorsal de Nasca, which would be located off the coast of Ica, extending over 62 392.0575 km^2 [25]. If both projects materialize, they would be the first national reserves located exclusively in the marine environment, since the above-mentioned reserves all include coastal land.

The creation of these areas has as its main objective the conservation of biodiversity and the marine-coastal landscapes; it allows economic activities such as fishing and tourism to be carried out, but with restrictions. Its exercise is subject to what is established by the

[23] art.63.3 DS N° 012-2001.
[24] https://www.sernanp.gob.pe/reserva-nacional-mar-tropical-de-grau
[25] https://www.sernanp.gob.pe/reserva-nacional-dorsal-de-nasca

zoning of the areas, which assigns the possible uses in the territory in ways that the conservation of the environment and the use of its resources can be balanced. Each area has its own criteria for identification and zoning, defining among other: areas for wild use, direct use, recovery, strict protection, or special use.

In general, the areas of wild use and strict protection restrict the use of hydrobiological resources, including the types of fishing allowed, in order not to alter the dynamics of the species. These areas also tend to restrict the entry of tourist boats, while research activities are subject to evaluation by the reserves' authorities.

In the marine areas that are part of protected natural areas, only artisanal and small-scale fishing is allowed, while larger-scale is prohibited. Mariculture can be conducted through the allocation and granting of special concessions. In all cases, the exploitation of resources must be in accordance with the objectives of conservation of the ecosystems and landscapes of the area and the other national/regional management schemes on place. For this, the activities carried out must be approved by SERNANP – who has a binding opinion – and have the necessary authorizations (e.g. fishing permits, vessel registry, etc.).

B.3.5. Temporary restrictions: temporal closures

The closures are prohibitions of the capture or extraction of resources in a given space and time; in this sense, the closures can be *periodic* (i.e. repeated every year in the same season), *occasional* (e.g. anchoveta, merluza, anguila, bacalao de profundidad, bagre, chiri, caballa, jurel, etc.), and *permanent* (i.e. applied to protected species) (SPDA, 2019b). In addition, closures can apply to the entire territory or to a specific marine area (in which case, it is established at the province level).

Periodic closures aim at avoiding the capture of species during their maturation and/or reproduction process and occur every few months of the year. Some species of coastal marine areas that have temporal closures are: camarón de río [*Cryphiops caementarius*] (20th Dec-31st Mar), hammer shark [*Sphyrna zygaena*] (1st Jan – 10th Mar), mangrove crabs [*Ucides occidentalis*] (15th Jan – 28th Feb & 15th Aug – 30th Sep), concha negra [*Anadara tuberculosa*] (15th Feb – 31st Mar), Lorna [*Sciaena deliciosa*] (1st Apr – 30th Apr), Ispi [*Orestias spp*] (1st Mar – 30th Apr & 1st Sep – 31st Oct), trucha acoiris [*Oncorhynchus mykiss*] (1st Apr – 31st Jul), Chanque/Tolina [*Concholepas concholepas*] (1st Apr – 30th June & 1st Oct – 31st Dec), Perico/dorado [*Coryphaena hippurus*] (1st May – 30th Sep), Pejerrey Argentino [*Odontesthes bonariensis*] (1st Aug – 31st Oct), Paiche [*Arapaima gigas*] (1st Oct – 28th Feb), Boquichico [*Prochilodus nigricans*] (1st Nov – 31st Mar), Chita [*Anisotremus scapularis*] (1st Dec – 31st

Dec), Arahuana [*Osteoglossum bicirrhosum*] (1st Dec – 15th Mar) and Langostino de mar [*Penaeus vannamei*] (16th Dec – 15th Feb)[26]. The mentioned closed periods could change according to IMARPE recommendations.

Permanent closures aim to recover species considered endangered in order to guarantee their survival, the end of the closure period is subject to the recovery of the resource. Some species with permanent closures are: dolphins and minor cetaceans (Law 26585 [1996] & DS N° 002-1996-PE), the giant manta ray (RM N° 441-2015-PRODUCE), the sea horse (RM N° 306-2004-PRODUCE), sea turtles (RM N° 103-1995-PE), whale shark (RM N° 331-2017-PRODUCE) and sea lion (RM N° 103-76-PE)[27].

In general, closures at the level of the entire territory are imposed on fishing resources with a greater mobility, such as pelagic and demersal fish, and apply to all specimens at the national level (but for the anchoveta). The exceptions to this rule are the closure of the cangrejo violáceo [*Platyxanthus orbignyi*] (RM N° 159-2009-PRODUCE), cangrejo peludo (RM N° 159-2009-PRODUCE), cangrejo jaiva (RM N° 159-2009-PRODUCE).

This type of closure, however, is disputed by fishers who point out to behavior differences of certain species throughout the territory; suggesting that differentiated units can be found along the ocean and therefore further studies are needed. This is for instance the case of the langostino café [*Farfantepenaeus californiensis*], in the north of Peru. In 2004 through the RM N°305-2004-PRODUCE, the extraction of langostino (including: langostino blanco [*Litopenaeus vannamei & Litopenaeus occidentalis*], langostino azul [*Litopenaeus stylirostris*], langostino café [*Farfantepenaeus californiensis*], langostino rojo [*Farfantepenaeus brevirostris*], langostino cebra [*Rimapenaeus fuscina*], langostino pomada [*Xiphopenaeus riveti* and *Protrachypene precipua*], langostino duro [*Sicyonia disdorsalis* and *Sicyonia aliaffinis*] and langostino de profundidad [*Haliporoides diomedeae*]) was subjected to temporal restrictions in the regions of Tumbes and Piura. This was the result of a technical report of IMARPE (Nº PCD-100-139-2004-PRODUCE/IMP – *Situación del Recurso Langostino en la Región Tumbes*) in which it was explained that the volumes had been reduced since the 2000s due to its fisheries *boom* after the ENSO 1997/97; and that the companies were not following the sanitary standards resulting in the presence of white spot syndrome virus. However, fishers from Piura stated that the stocks of the langostino café [*Farfantepenaeus californiensis*] present for instance in Sechura Bay are a different one that the one in Tumbes. In 2016, IMARPE published the report *Aspectos del periodo reproductivo del langostino café en la Región Piura* through which concluded the no presence of mature specimens of the langostino café in the coast of Piura but that in order to understand the causes of this, the studies have to continue and

[26] https://pescayconsumoresponsable.produce.gob.pe/vedas.html
[27] http://www.minam.gob.pe/educacion/wp-content/uploads/sites/20/2015/02/2.5.-PRODUCE-tallas-de-pesca.pdf

therefore the fishing. As a result, through the RM N° 486-2016-PRODUCE, the extraction of the langostino café [*Farfantepenaeus californiensis*] was authorized (anyway, the extraction must always finish once the biological indicators indicate that the species is starting its reproductive activity). In addition, IMARPE is since 2018 conducting exploratory fishery of this resources and is studying the environmental impact of different fishing gears.

On the other hand, closures that are for specific areas are generally imposed on fishing resources with little range of mobility, such as benthic resources, for example the prohibition of the extraction of the sea urchin/erizo [*Loxechinus albus*] in the province of Marcona since 2007 (RM N°100-2006-PRODUCE), the one for macha [*Mesodesma donacium*] in Arequipa, Moquegua and Tacna (RM N° 099-1999-PE) or the one for the octopus in Lamabayeque and Piura (RM N° 483-2009; RM N° 482-2011-PRODUCE)[28].

B.4. Surveillance and Sanctioning Systems

The system of control and of infractions and sanctions is defined by the RISPAC - *Reglamento de Fiscalización y Sanción de las Actividades Pesqueras y Acuícola* (DS N° 017-2017-PRODUCE). The controling and sanctioning tasks are carried out by the *Dirección General de Supervisión, Fiscalización y Sanciones* of PRODUCE and DIREPRO, supported by DICAPI and the National Police (PNP), depending on the territorial jurisdiction in which the actions are carried out. These institutions have the power to supervise and sanction extractive, processing and commercialization activities of fisheries and aquaculture, having unrestricted access to any space where the activity is carried out (landing sites, processing plants, transport units, etc.). The infractions are classified into: general infractions; infractions related to: the processing, transport, commercialization and storage; to foreign vessels and recreational fishing; to the Amazon and Titicaca Basin ROPs; to the tuna fisheries; and to macroalgae.

Broadly speaking, the infractions related to the extractive activity are: fishing without a permit or authorization; the extraction of resources in prohibited areas or periods; diverting hydrobiological resources reserved to the DHC to the industrial production (i.e. IHC); exceeding the bycatch percentages and allowable tolerance indices as well as authorized volumes; obstructing the access to information, regarding the extraction of juveniles and bycatch and fish volumes, to the supervising entities; extracting resources with fishing gears or methods not allowed (e.g. dynamite, or toxic compounds); not having a satellite tracking system (SISESAT) or not having it operational and operating; and landing of fisheries products in unauthorized areas.

[28] https://www.mardelperu.pe/pesca/7/pesqueria-bentonicos

According to the severity of infractions, PRODUCE or DIREPRO can apply four types of administrative sanctions: (i) fines; (ii) the confiscation of products or assets that are the subject of infringements; (iii) the suspension of the rights to exercise the activity; and (iv) the cancellation of administrative rights, the reduction of the IVQ or aquaculture areas. The calculation of fines considers the following factors: the fine expressed in UIT - *Unidad Impositiva Tributaria*, the level of illicit benefit, the probability of detection and aggravating factors (recidivism, harm to third parties, extraction of fully exploited, recovering or protected resources, threat or violence against the inspectors) and mitigating factors (informs about the infraction and accepts the fine, adopts corrective measures to reduce the damage, does not present a record) (art.34. - DS N° 017-2017-PRODUCE).

In 2018, a norm that legislated the interdiction actions for illegal fishing (DL N° 1393[2018]) or "the scrapping (disablement), confiscation or destruction of boats, machinery or equipment used for the development of illegal fishing"[29] was issued. These are sanctioning actions that do not replace administrative sanctions, but rather complement them and that are carried out by the Peruvian National Police or by DICAPI. The norm defines illegal fishing as "any activity that affects or may affect hydrobiological resources that are carried out in breach of the regulations on the matter, be it administrative or criminal"[30], considering as such: the construction, installation or operation of a) shipyards without a qualifying title; b) boats without authorization to increase the fleet; c) of fish processing plants without authorization or license; and, unauthorized landing points; d) the extraction of resources with a boat without a fishing permit; e) the use, transportation or possession of unauthorized fishing gear and / or explosives or toxic substances.

Certain practices of illegal fishing are also criminalized in the Peruvian penal code, establishing penalties involving deprivation of liberty ranging from three to seven years in the case of aggravated crimes. It is considered as crime and not only infraction: the illegal trafficking of aquatic species of wild flora and fauna, which includes the acquisition, sale, transport, storage, import or export of species: without license, in closure, juveniles and/or reserve areas[31] and the illegal extraction of aquatic species, considering species in closed season, juveniles, that exceed the IVQ, that are not licensed, or that have been extracted using illegal methods[32]. It is considered aggravating crime when the species come from natural protected areas, closure areas or as protected species[33]. Falsehood in the report of captured fishing volumes is also considered a crime.

[29] https://www.actualidadambiental.pe/emiten-decretos-para-combatir-la-pesca-ilegal-e-iniciar-un-nuevo-proceso-de-formalizacion/
[30] art. 3, Cap III, DL 1393.
[31] art 308-A penal code.
[32] art 308-B penal code.
[33] art 309 penal code.

B.5. Limits to Fisheries Governance

Despite the development of new regulatory instruments, restrictions, and sanction systems in the last two decades, there is a strong persistence of informal and illegal activities in both artisanal/small-scale and industrial productive chains. These activities occur out of sight of state regulators or, occasionally, with their compliance and active participation (Palacios, 2016). In a broader perspective, the limits to fisheries governance are intimately linked to questions of legitimacy of the state interventions in this area. In many cases, informal or illicit practices are defined and even co-produced by shifting legal boundaries in terms of access to resources, spaces, licenses, or catch quota. In the following, we will deal with four non-exclusive realms: access to fisheries, spatial and extraction restrictions and law enforcement and/or legitimacy.

B.5.1. Access to fishing

Many artisanal and small-scale crews extract resources without having fishing permits, vessel permits, or any accreditation. According to the last structural survey of artisanal fishing (IMARPE, 2018), about 31% of artisanal fishers fished without having accreditation, and according the I census of artisanal fisheries (PRODUCE, 2012) nearly 60% of artisanal vessels do not have a permit. In addition, some vessels don't have a number of registry or operate with a false or duplicated registration number – in most cases corresponding to vessels with smaller hold capacity.

B.5.2. Spatial restrictions

Some artisanal and small-scale vessels extract fish in non-permitted areas such as the exclusion zones of the national reserve of Paracas. It is also common that small-scale vessels extract anchoveta and sardine with purse seine or trawl nets and mechanical equipment inside the 3-miles zone, disregarding both, the GFL and the ROP for DHC anchoveta. In the past the industrial fleet used to fish anchoveta inside the first 5 miles despite the prohibition. Since having SISESAT became mandatory for large-scale vessels, this practice became less frequent but has not being completely eradicated[34].

B.5.3. Extraction restrictions

Extraction below the minimum size, on closure season, using prohibited methods (i.e. dynamite[35]) and above the quota - or without having one - is common among the artisanal, small-scale and large-scale fleet. In the case of anchoveta, artisanal and small-scale vessels divert

[34] https://www.idl-reporteros.pe/sanciones-no-aceptadas-y-discrepancias-de-pesaje/
[35] https://es.mongabay.com/2019/05/peru-pesca-con-dinamita-en-reserva-nacional-paracas/

about 150,000 tons of anchoveta for DHC to supply local fishmeal plants (Grillo et al., 2019). Also, artisanal and small-scale extraction for DHC which ends up in local and regional markets, tends to have a very high rate of juveniles. A recent study showed that between 2018 and 2019 about 70 % of the fish sold in San José landing site (Lambayeque) and 65% of the fish sold in Villa María wholesale market (Lima) were below their minimum catch size (Velez-Zuazo et al., 2020).

The industrial fleet, on the other hand, tends to underreport their extraction levels[36] so they can extract larger volumes than their quota allows. The practice of extracting anchoveta and sardine juveniles, also known as *peladilla*, can be found in both fleets[37]. According to official sources, between 2012 and 2016 the volumes of exported fishmeal were bigger than the volumes of fishmeal produced formally, in average the difference was 68 tons (Grillo et al., 2019). This suggests that a proportion of fishmeal exports is being produced with non-registered catch from the industrial fleet.

B.5.4. Law enforcement/or legitimacy

Fisheries regulation schemes only work if fishers are committed to upholding them and the ways in which this is achieved is a complex issue. It is not unusual to conduct and analysis of the laws regulating the fisheries and/or aquaculture sectors and find blatant contradictions between the laws, and the practices on the ground. Compliance with the laws can be subjected to changing interests in a specific environment or trust in the institutions among other factors. Regarding the latest, in the case of the Peruvian marine-coastal environment were policies are developed based on the “best scientific available knowledge”, users question the legitimacy of the state and IMARPE (for instance, IMARPE has an ongoing investigation regarding the transparency on the establishment of anchoveta quotas for IHC in 2019; an issue that was denounced by artisanal fishers in several occasions); this is especially true for artisanal and small-scale fishers due to a sense of marginalization in opposition to the large-scale fleet and the lack of attention to other forms of local traditional knowledge.

Moreover, many of the activities (illegally) developed are with the implicit approval of the government and it is important to keep in mind that whenever a formalization process starts, windows of opportunity to negotiate questions of legitimacy are made available. For instance, the Peruvian state has since long ago identified an increase in the fishing effort of the artisanal fleet that is perceived to threaten the sustainability of the resources. As a result, a cutback in the registry of new artisanal vessels or the increase of artisanal vessels ‘hold capacity started

[36] https://www.idl-reporteros.pe/peru-el-pescado-que-desaparece/
[37] http://laindustria.pe/nota/12962-pescadores-exigen-cese-de-temporada-de-pesca-de-anchoveta-vdeo

in 2006; initially, this was a temporary measure that ordered the prohibition of the construction of new artisanal vessels whose hold capacity exceeded 10 m^3 (DS N°020-2006 PRODUCE) but it has not stop since then (Figure 8). In both last formalization periods (2016 and 2018) vessels without permit, registry number, and/or sanitary habilitation were able to participate regardless of whether or not meet the restrictions described by the prior DS. In this way, opening a window of opportunity for the formalization of vessels that had been built or acquired illegally.

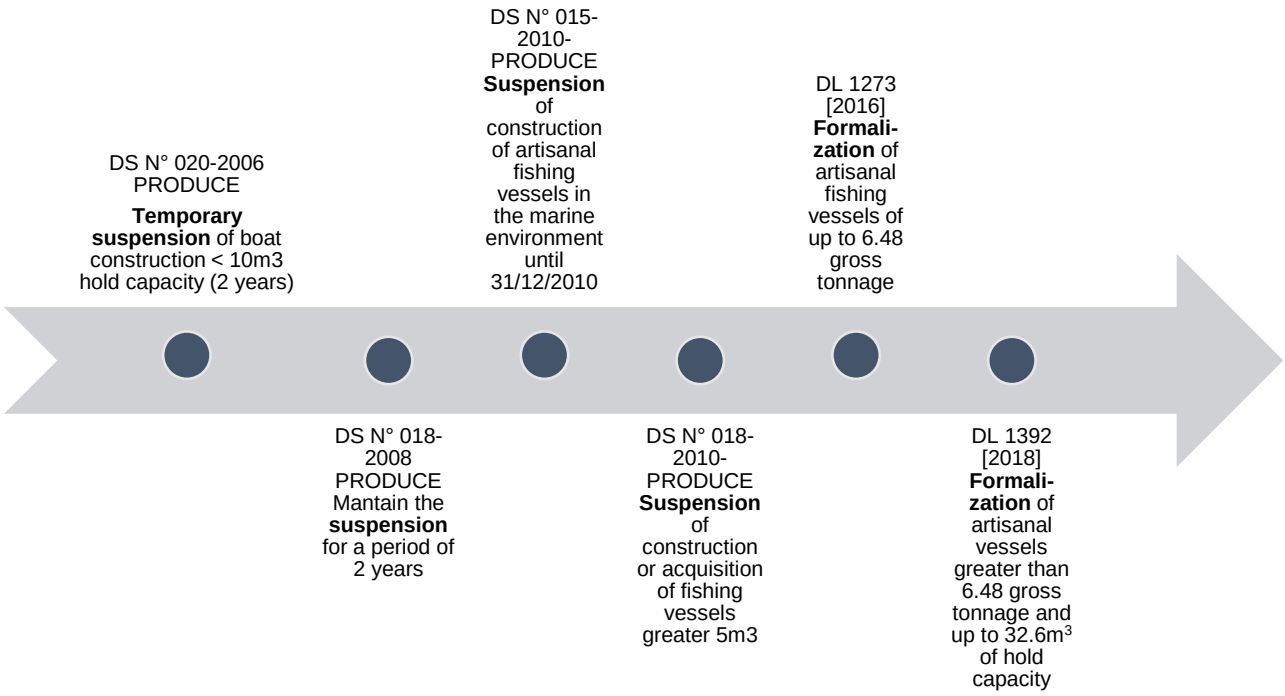

Figure 8. Evolution of the restrictions to access the fishery with new artisanal fishing vessels.

Source: DS N° 020-2006- PRODUCE; DS N° 018-2008-PRODUCE; DS N° 015-2010-PRODUCE, DL N° 1273; DL N° 1392; elaborated by Isabel E. Gonzales

In 2020, due to the Covid19 situation, the term for the formalization of the artisanal fishery, normed by the art.4. of the DL N° 1392 [2018], was extended from October 2020 to the 5th of October of 2021 (DL Nº 1484 [2020]) [38],[39]. This was pushed because the resources users (embarked and non-embarked artisanal fishers but also artisanal/small-scale vessel owner (*armadores/as*), artisanal processor and fish farmers) affected by Covid19 eligible to apply for social aids (a credit of 2000 PEN that has been mobilized by the state through a fund of 22M PEN to FONDEPES) need to demonstrate they are formal.

[38] https://busquedas.elperuano.pe/normaslegales/decreto-legislativo-que-amplia-el-plazo-de-la-vigencia-del-p-decreto-legislativo-n-1484-1866210-2/

[39] The formalization consists of five stages: (i) Inscription in the list of vessels for the formalization of artisanal fishing; (ii) verification of the existence of vessels only in the case of vessels that do not have a a vessels´number of registry; (iii) Granting of the vessels´number of registry; (iv) granting of the technical protocol for fishing permit; and, (v) granting of fishing permit.

B.6. Conflicts in Fisheries Governance and Management

There is an important number of tensions and conflicts in the fishing sector including those that confront fishers with each other, fishers and other actors of the productive chain, fishers and state actors, and fishers and other industries or activities. Differences revolve around topics such as competition for resources, degradation of environmental conditions, access restrictions, and value appropriation.

B.6.1. Conflicts among fishers

Conflicts tend to emerge for the competition between artisanal and small-scale fishers that share fishing zones but extract in unequal conditions regarding their level of mechanization, equipment, and hold capacity. One example is the dispute between *balseros*, or raft traditional fishers, and *bolicheros*, fishers with conditioned vessels for anchoveta capture. *Balseros* complain that *bolicheros* use purse seine nets to fish inside the 5 miles, not only degrading the conditions of the fishing zones, but pushing down the price of fish in landing places. They claim that the GFL should distinguish between "real" artisanal fishers (those that extract manually and in low volumes) and semi-industrial vessel (those that extract using mechanized equipment) (Espinosa, 2019), incorporate *bolicheros* to the industrial fleet and exclude them from the first 5 miles (Palacios, 2016). This is also the case of the calamar [*Loligo gahi*] in the north as artisanal fishers that rely predominantly on hook gears state that fishers are also targeting this species with purse seines; which is prohibited in the first 5 miles.

B.6.2. Conflicts between fishers and other actors of the value chain

Artisanal and small-scale fishers hold tense relations with merchants because of the way the price of fish is defined. Many merchants finance fishing trips and occasionally lend money to the crew members they work with. By virtue of this financial assistance, they tend to have leverage to set the price of catches, usually before the fish gets to the landing sites and below market price. Fishers have little capacity to negotiate with merchants, not only because of the need for financial resources they provide, but also for their need of a reliable demand due to the perishability of fishing resources.

B.6.3. Conflicts between fishers and state actors

Conflicts with state actors emerge when aim at restricting the access and use of fishing resources, issuing new regulations or sanctioning informal activities. When fishers oppose state actions, they tend to claim that the state lacks legitimacy, skills or knowledge of the marine environment. In these circumstances, fishers disregard regulations and/or try to change norms by stablishing direct dialogues with state representatives or organizing public protests. For

example, in day-to-day operations *bolicheros* fishing for DHC anchoveta do not comply with regulations that exclude artisanal and small-scale fleet from the fishmeal industry (Grillo el al., 2019). But vessel owner organizations are permanently looking for political allies that help them advance the formalization of their activities establishing a quota of IHC anchoveta for the artisanal and small-scale fleet. In the Ica region, conflicts between fishers and the state have also emerged regarding regulations to access the collection of macroalgae; a new regulation allowed non-artisanal fishers to access the activity (*Mecanismos para el ordenamiento de la colecta y acopio de Macroalgas Marinas Varadas, en el ámbito de la región de Ica* - RD N° 642-2018- GORE ICA/GRDE-DIREPRO). In opposition, fishers stated that this RD goes against the DS N° 009-2009-PRODUCE (*Reglamento de Ordenamiento Pesquero de las Macroalgas Marinas*)[40].

B.6.4. Conflicts between fishers and other economic actors

Usually conflicts with other economic activities or industries emerge when the development of such activity represents a threat to the environmental conditions of the ocean and fishing resources. One recent example of this type of conflict is the opposition of artisanal and small-scale fishers of Piura and Tumbes to oil exploration in the ocean by Tullow Oil enterprise. Fishers claim that oil extraction would entail oil spill hazards and would create environmental disturbance. Their activities might impact fish availability, affecting the livelihoods of a large number of people that work on the fish production chain in both regions[41] (see more in subsection C.6.2). Some conflicts also exist between fishers and tourist operators. For instance, in Paracas where tourism is an important activity, tourist operators heavily relied on the conservation of key species populations such as sea lions while fishers stressed that the abundance of this species is negatively affecting fisheries activities as the sea lions damage the fishing gears (IMARPE, 2018). Tourist operators also complained about fishers being irresponsible regarding plastic pollution and fishers also complained that tourism is granted access to certain ocean spaces from which they are excluded.

[40] https://diariocorreo.pe/edicion/ica/pescadores-pesca-sargazo-817519/
[41] https://diariocorreo.pe/edicion/piura/paro-de-pescadores-se-acato-en-paita-talara-y-sechura-891453/

C - AQUACULTURE GOVERNANCE

C.1. Legal Framework and Instruments

Aquaculture was regulated by a specific law in Peru for the first time in May 2001 with the approval of Law N° 27460 [2001] (Aquaculture Promotion and Development Act - *Ley de promoción y desarrollo de la acuicultura*), the management scheme of which was approved that same year (DS N° 030-2001-PE) (Table 6). This law aimed, as its name states, to promote and develop the aquaculture activity. That same year the Ministry of Fisheries also enacted new sanitary regulations (DS N° 040- 2001- PE – *Regulaciones sanitarias de las actividades de pesca y acuicultura*) as a result of the closing of the European Union market for the importation of Peruvian mollusks due to a hepatitis A epidemic in Valencia (Spain) after the consumption of contaminated bivalves [*Donax sp*][42].

Table 6. Summary timeline of the main (in place and no longer in place) legislations regarding the Peruvian aquaculture.

Year	Law	Decree	Plans and Policies
2001	DL N° 27460 (*Ley de Promoción y Desarrollo de la acuicultura*. Valid until 2015)		
2001		DS N° 030-2001-PE (*Reglamento de la Ley de Promoción y Desarrollo de la Acuicultura*. Valid until 2015)	
2001		DS N° 040-2001-PE (*Regulaciones sanitarias de las actividades de pesca y acuicultura.* On place)	
2010			National Aquaculture Plan (valid until 2021)
2015	DL N° 1195 (*Ley General de Acuicultura*. On place)		
2016	DS N° 003-2016-PRODUCE (*Reglamento de la Ley General de Acuicultura*. On place)		
2019		DS N° 012-2019-PE (*Reglamento de Gestión Ambiental de los Subsectores Pesca y Acuicultura*. On place)	

Elaborated by María Garteizgogeascoa

In 2010, the national aquaculture development plan was adopted but it was not until 2015, under the government of Ollanta Humala Tasso, when the first, and so far, only law to 1) regulate all phases of the activity, 2) create an own regulatory body and 3) establish the basic

[42] Many other legislations followed the DS 040-2001-PE with the aim to try to lift the ban of the import to the UE markets. This was achieved in January 2004 (Decisión 2004/30/CEE).

definitions, was approved (DL N° 1195 [2015] – *Ley General de Acuicultura*) (Zavala, 2017). One year later its management scheme was adopted (DS N °003-2016-PRODUCE; the latest modifications as for today (June 2020) is the DS N° 002-2020-PRODUCE). In 2019, the environmental management regulation scheme for the fisheries and aquaculture subsectors was approved (DS N° 012-2019-PE). The development of the first national aquaculture policy is currently being discussed[43].

C.2. Aquaculture Access Regimes

As mentioned before, according to the art.66. of the Peruvian constitution the renewable and non-renewable resources are patrimony of the nation and therefore the state is sovereign in their use and the one that grants the use of the resources (through concessions) to individuals or companies. However, access to aquaculture can be through 1) *concessions* and 2) *authorizations*. In addition, areas inside protected areas are granted through *special concessions* (see subsection C.5). Moreover, in the first law (DL N° 27460 [2001]), the (exclusively) access for organized artisanal fishers to the mariculture of the Peruvian bay scallop was granted through *restocking*[44] *authorizations*[45]. Nowadays, under the DL N° 1195 [2015] the latest access regime is not in force, and therefore there is currently no specific access regime for recognized organized fishers. This is leading to conflicts as we will explain in subsection C.6.3. So, concessions are granted to the development of aquaculture activities in public domains land or in public domain aquatic areas, special concessions in natural protected areas and the authorizations for the development of aquaculture on non-state private domain land (art.30. DL N°1195 [2015]) as was shown in Table 2.

Today, the process to access the aquaculture activity proceeds as shown in Figure 9 (below).

First of all, the areas in which the aquaculture can take place need to be determined by PRODUCE based on the technical reports of public and private institutions. Once the areas

[43] https://larepublica.pe/economia/2019/08/08/politica-nacional-pesquera-se-terminara-a-fin-de-ano/?fbclid=IwAR34XVby3jALktBv_qhRq9HZQnLVAWPa6FGipE4ZsHyQlwus6RL-_3LQu9w#

[44] Sowing or re-sowing of hydrobiological species in marine or continental environments, with or without of it, with seeds from the natural environments or from production centers – art.8. DS N° 030-2001-PE.

[45] Las acciones de poblamiento o repoblamiento con fines de aprovechamiento responsable de los recursos a cargo de comunidades indígenas o campesinas, así como de organizaciones sociales de pescadores artesanales debidamente reconocidas por el Ministerio de Pesquería, podrán realizarse mediante convenio de conservación, inversión y producción acuícola suscrito con el ministerio de pesquería, que debe contemplar entre otros aspectos, los fines y objetivos a alcanzar, zona a poblarse o repoblarse, volúmenes de siembra, acciones de seguimiento y periodo previsto de cosecha - DS N° 030-2001-PE. Despite this access regime figure being called "restocking authorization" in practice it was not an authorization but a concession as the activity is carried out entirely in a public domain. In the current law the figure of restocking goes back to the conservation aim and can only be carried out by PRODUCE and the regional governments through restocking plans (with native and naturalized species after technical consultation of IMARPE.

are determined they have to be habilitated by DICAPI and need to have the sanitary qualification granted by SANIPES. These habilitated areas are then published in the national aquaculture cadastre so that interested applicants can initiate the paper work in order to have access.

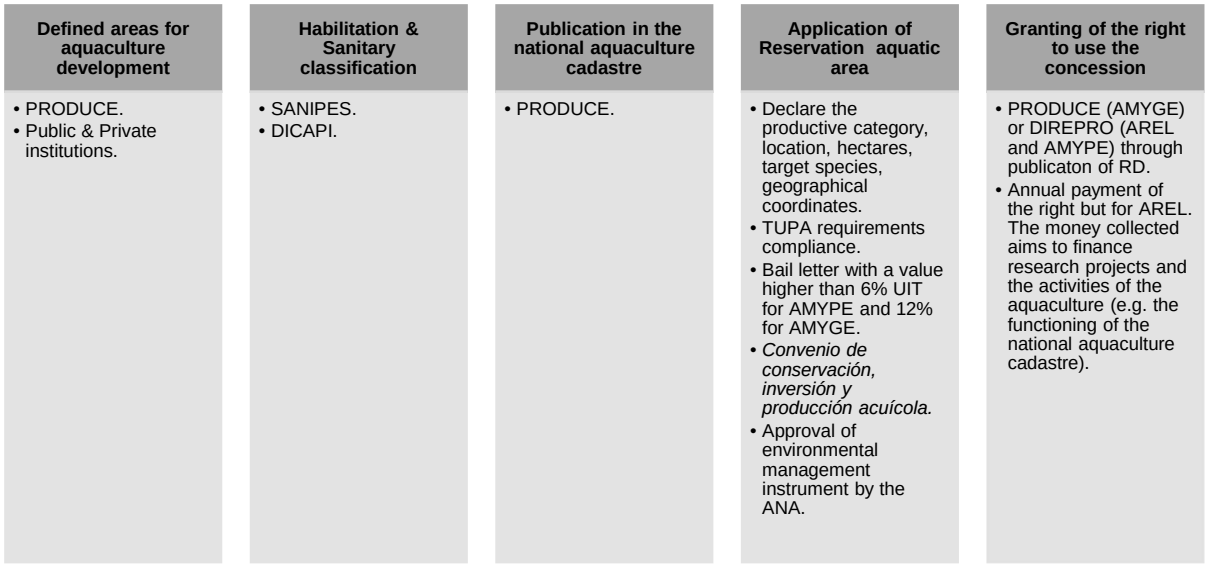

Figure 9. Process to access the marine aquaculture activity through concessions.

Sources: DS N°003-2016-PRODUCE; RM N°157-2019-PRODUCE; *Elaborated by María Garteizgogeascoa*

Applicants need to:

(i) declare their productive category. The productive category ultimately determines the type of organization or company the culture conducting entity needs to be (i.e. AREL, AMYPE and AMYGE – see Table 7).

(ii) comply with the requirements stablished in the TUPA (*texto único de procedimientos administrativos*).

(iii) present a bail letter[46] with a value higher than 6% UIT for AMYPE and 12% for AMYGE (none for AREL). This was modified through the RM N°157-2019-PRODUCE as the initial management scheme of the DL N° 1195 [2015] (i.e. the DS N° 003-2016-PRODUCE) stated that the bail letter always had to have a value of 12% of one UIT per hectare requested. However, stakeholders complained about the high price, as AMYPE, the productive category under which a higher number of rights are granted, is mainly formed by associative forms, business or cooperatives, of artisanal fishers that have a limited socioeconomic status[47].

[46] Span. *Carta fianza*

[47] In addition, the initial management scheme also stated that the bail letter could be executed if the access granting process was not initiated within the term of the aquatic reservation (e.g. max 120 days for AMYGE and AMYPE and 60 days for AREL) but due to the fact that the approval of the environmental management instruments is done by other institutions outside PRODUCE or the Regional Governments which slower the process, this was modified so

(iv) subscribe with PRODUCE or DIREPRO a *Convenio de conservación, inversión y producción acuícola*. PRODUCE approved through the RM N° 258-2016 this document format. This document contains among other things: aims, commitments and obligations of the parties, declaration of the location, number of hectares, target species and geographical coordinates, grounds for expiration of the rights (i.e. transfer the right without the approval of the Ministry and the modification of the *Convenio* or the subscription of a new one; harm the ecosystem; breach the operation schedule and production goals as the document describes a progressive occupation of the area and must consider a minimum advance of 20% of the occupation of the production area in the 1st year, 50% in the 3rd year and 100% until the 8th year; stop reporting monthly for two consecutive months or three interleaved; have been sanctioned 3 times consecutively in a three-year periods for the same offense).

(v) initiate the procedure for the approval of environmental management instrument by the ANA. All this need to presented to the *Ventanilla Unica de Acuicultura* (VUA).

The holders of the areas have the right to use the sea bottom, water column and its surface, vertically projected from the sea bottom. This legally excludes any other activity in the cultured area, which is another major concern of fishers with respect to the new law (see subsection C.6.4.). Having the right of the water column could lead to the exclusion of artisanal fishers in aquaculture areas (in which they currently fish) (art.40. DS N° 003-2016-PRODUCE). The concessions have a duration of up to 30 years, renewable for the same period.

One of the first criticisms that the new law (DL N° 1195 [2015]) received was in relation to the production limits. Farmers of Peruvian bay scallop critized the categorical limitation in production that come with the abovementioned classification of aquaculture producers for not matching culture reality. This is because the production limits (of < 3.5tons, 3.5-150 tons, and >150 tons for AREL, AMYPE, and AMYGE, respectively) are estimated based on what is landed (i.e. including the shell of the Peruvian bay scallop), while producers typically can only market 20% of this volume (which reflect the weight of the scallop´s marketable parts, i.e. mussel and/or gonads, remaining after the shell is removed in the processing plants). In fact, this regulation was repealed by RM N° 157-2019-PRODUCE but it was reestablished again in the following modifications.

that the beginning of the process for the approval of the environmental management instrument leads to the automatic extension of the validity of the aquatic area reserve until notification of the resolution that resolves the certification procedure of the corresponding environmental management instrument. If the environmental management instrument is approved the reservation of the aquatic area is automatically expanded for 15 days (started counting from the notification of the resolution); time in which it is necessary to begin the access procedure.

Table 7. Differences between the three productive categories specified in DL N° 1195 [2015] law.

	AREL	AMYPE	AMYGE
Name	*Acuicultura de Recursos Limitados*	*Acuicultura de Micro y Pequeña Empresa*	*Acuicultura de Mediana y Gran Empresa*
Aim	Self-consumption/ self-employment oriented enterprises	Commercial	Commercial
Production Capacity limits	Max 3.5 gross tons	More than 3.5 gross tons less than 150 gross tons	More than 150 gross tons
Legal Status	Natural persons. Included the activities conducted by education centers with non-commercial aims	Natural and legal persons	Natural and legal persons
Observations		Also inside this category the research authorizations, the seed production centers and the production of ornamental hydrobiological resources	
Environmental Certification Needed	Non. Follow the legislation of solid and fluid sewage management	Yes. Environmental Impact Declaration (DIREPRO)	Yes. Semi-detail Environmental Impact Assessment (PRODUCE)
Access granted by		DIREPRO	Central government (PRODUCE)
Sanitary Habilitation of the cultivation center	No	Yes (granted by SANIPES)	

Source: DS N° 003-2016-PRODUCE; Elaborated by María Garteizgogeascoa

As mentioned, the access through restocking authorizations no longer exists. When the DL N° 1195 [2015] came into force, it was first decided that all the restocking authorizations were going to be automatically categorized as AMYPE (DS N° 003-2016-PRODUCE). This happened through the DS N° 014-2017-PRODUCE. However, more recently through the DS N° 008-2020-PRODUCE it was stated that for the current active 186 restocking authorizations (granted at the time by the regional governments of Piura, Áncash, Tacna, Arequipa and Moquegua) the general directorate of aquaculture of the Vice Ministry of Fisheries and Aquaculture of PRODUCE will be publishing the historical production of the last five years corresponding to the holders of those restocking authorizations; and that according to these values, the holders need to present their request to adapt to an AMYPE (needs to be presented to the regional governments) or an AMYGE (needs to be presented to PRODUCE) until the 31st of May 2020.

C.3. Extraction Restrictions

C.3.1. Minimum sizes

As of June 2020, and according to the national aquaculture cadastre, the target species of mariculture in Peru are: concha de abanico [*Argopecten purpuratus*], cochayuyo [*Eisenia cokeri*], sargazo [*macrocystis pyrifera*], huiro [*Lessonia trabeculata*] and other unspecified algae species, langostino [*Litoenaeus vannamei*] (although in the past also other species were targeted[48]), lenguado japonés or hirame [*Paralichthys olivaceus*], chita [*Anisotremus scapularis*], lisa marina [*Mugil cephalus*], macha [*Mesodesma donacium*], chanque [*Concholepas concholepas*], erizo [*Loxechinus albus*], lapa [*Fissurella limbate*], caracol [*Thais chocolata*], corvina [*Cilus gilberti*], pulpo [*Octopus mimus*], and choro [*Aulacomya atra*]. According to the RM N° 209-2001-PE (Annex II) some of these cultivated species are also under minimum size regulations for its commercialization (Table 8).

Table 8. Minimum size for the commercialization of cultivated species.

Species	Length/weight	Measurement
Caracol [*Thais chocolata*]	6.0 cm	Peristomal length
Concha de abanico [*Argopecten purpuratus*]	6.5 cm	Valve height
Chanque [*Concholepas concholepas*]	8.0 cm	Peristomal length
Choro [*Aulacomya atra*]	6.5 cm	Valve height
Lapa [*Fissurella limbate*]	6.0 cm	Valve height
Macha [*Mesodesma donacium*]	7.0 cm	Valve height
Erizo [*Loxechinus albus*]	7.0 cm	Shell diameter
Pulpo [*Octopus mimus*]	1.0 kg	-
Chita [*Anisotremus scapularis*]	24 cm	
Lisa [*Mugil cephalus*]	32 cm	
Corvina [*Cilus gilberti*]	55 cm	

Source: Produce[49]; elaborated by María Garteizgogeascoa

C.3.2. Exclusion zones

Unlike fisheries that, unless otherwise specified, can be carried out in all the ocean space, mariculture can only be conducted in habilitated ocean spaces (see Figure 9). As of June 2020, and according to the national aquaculture cadastre the total area of the Peruvian sea dedicated to mariculture is of 24333 ha. From those, 315 ha are inside marine-costal protected areas, specifically inside the Paracas national reserve with the aim of producing Peruvian bay scallops. In the other marine-coastal protected areas (i.e. San Fernando and Islas, Islotes and Puntas Guanreas national reserves; Illescas and Ancón reserve areas; the national sancturaries of Lagunas de Mejía and Manglares de Tumbes and the Albufera medio mundo) no aquaculture is conducted. Mariculture can only be conducted inside protected areas following evaluation of compatibility with the management plans of the protected areas, the presentation

[48] http://www.fao.org/fishery/countrysector/naso_peru/es#tcN70085
[49] https://pescayconsumoresponsable.produce.gob.pe/tallas-minimas.html

of a favorable environmental impact assessment and according to the marine zoning and favorable technical opinion approved by SERNANP. Moreover, preferably the mariculture activities have to be developed in floating or suspended systems that include the phases of planktonic larvae catch, pre-breeding, fattening and harvesting when appropriate (that is the case of the Peruvian bay scallop) (art.43. - RM N° 003-2016-PRODUCE).

Another exclusion area are the “corridors” that separate the aquatic concessions; this separation needs to be bigger than 100 meters. This regulation was included with the DL N° 1195 [2015] in order to respect the free transit and navigation of fishing boats, the currents and prevent the eutrophication of the marine environment. As a result, the aforementioned corridors are generally a forbidden area to develop mariculture unless the holders of the concessions reach an agreement with the fishers from the area; this creates conflicts as we will explain in subsection C.8 (art.40. - RM N° 003-2016-PRODUCE).

C.3.3 Temporary restrictions: temporal closures

Here it is important to mention the closures of specific areas that are imposed to the extraction of the Peruvian bay scallop from natural banks. That is the case for the natural banks of the Pisco coastline and the Callao region since 2003 (RM N° 189-2003-PRODUCE), and at the Lobos de Tierra island in Piura since 2006 (RM N° 293-2006-PRODUCE). This is important as the mariculture of the Peruvian bay scallop largely depends (especially in the Sechura Bay) on the obtention of scallop seeds from natural banks.

Regarding also the Peruvian bay scallop, the whole value chain can be affected by temporal harvest closures if the sanitary requirements established by SANIPES, through its bivalve mollusk control program (PCMB), are not accomplished. About the monitoring in the aquatic areas, SANIPES counts with several monitoring locations in every productive marine area of Peru, from which samples are taken and analyzed. Monitoring occurs every week, every two weeks or twice a year depending on the measured variables; marine biotoxins, potentially toxic phytoplankton and oceanographic variables (such as temperature, salinity, pH, dissolved oxygen and turbidity); hepatitis A virus and microbiological indicators; and heavy metals respectively. This is the case for the Peruvian bay scallops produced to be exported to the European Union; in the case of production to non-European Union Market marine biotoxins, potentially toxic phytoplankton and oceanographic variables are monitored biweekly. When this happens, an inspection for the release of the aquatic lots that have their mariculture products immobilized needs to be carried out.

C.4. Surveillance and Sanctioning Systems

As mentioned in subsection B.4. the system of control and of infractions and sanctions is defined by the RISPAC (DS N° 017-2017-PRODUCE). Moreover, in the DS N° 003-2016-PRODUCE it is also stated that any activity that violates the regulative scheme of infractions and sanitary sanctions for fisheries and aquaculture (RISSPA) would be considered liable to sanction. However, this has not yet been approved (as of June 2020).

Broadly speaking, the infractions related to the aquaculture activity are: carrying out aquaculture activities without having access (either because it has not been granted, either because it has been suspended) or without being the holder of the right; using the area for a different aquaculture purposes and/or fail to comply with the management plan and/or unjustifiably breach the investment or production goals, that supported the granting of the access; failing to comply with the obligations set forth as causal of expiration in the *Convenio de conservación, inversion y producción acuícola*; not reporting to the competent authorities the appearance of any infectious break; importing, exporting or re-exporting species without permit to do so; failing to progressively occupy the defined area for the production and investment and/or not complying with the delimitation of the aquatic area; obtaining seeds from the natural environment without the necessary permit; installing or implementing unauthorized infrastructures, materials or equipment; interfering with traditional activities or affect the rights acquired by others outside the granted aquatic area; developing research, technological and innovation activities without having informed to the competent authorities.

The type of sanctions it is not the same for the mentioned infractions. For instance, the illegal extraction and processing of aquatic species is a typified crime in the penal code (art.308-B) that can be punished with up to five years in prison. In the case of the Peruvian bay scallop this is the case for the extraction of seeds from the natural banks of Lobos de Tierra island, Pisco and Callao, and for the processing of Peruvian bay scallops in unauthorized establishments.

C.5. Limits to Aquaculture Governance

Following the same structure as subsection B.5. informal and illegal activities in aquaculture can be found in: the access to the activity and spatial and extraction restrictions. Here we will focus on the case of the Peruvian bay scallop, especially in the case of Sechura Bay, where the majority of the production is concentrated (PRODUCE, 2018).

C.5.1. Access to culture areas

As we have mentioned, the DL N° 1195 [2015] eliminated the access regime of restocking authorization (access by which the marine environment of Sechura Bay had only been habilitated) which granted exclusivity access rights to OSPAs and indigenous and peasant communities. However, in Sechura Bay prior to 2015 third parties (including big companies) already had access to Peruvian bay scallop farming production via informal and illegal ways (key informant – December 2019). This happened via two ways: (i*) renting*, in which the OSPA would rent the area to another person/company for exchange of money and then the person/company is able to conduct cultures as they please on this area, while the members of the organizations are typically not involved in the grow out activities. This was illegal if not done following the regulations of the DL N° 27460 [2001], according to which the authorizations could only be transferred to third parties with the authorization of the Ministry of Fisheries (today PRODUCE) and by developing a new *Convenio de conservación, inversión y producción acuícola* or an addendum to it (art.29. DS N° 030-2001-PE[50]); and, if it happened under DL N° 1195 [2015], the transferred needed to be done also with the authorization of the Ministry and by changing the owner and developing a new *Convenio de conservación, inversión y producción acuícola* always as long as it is proved to have complied with 20% of the productive plan (art.47. DS N° 003-2016-PRODUCE[51]). Moreover, as explained in subsection C.4. the aquatic activities need to be carried out by the owners of the right. A second option for gaining access was (ii) *selling*, in which the holders of the areas changes. This would be illegal under the DL N° 27460 [2001] law if the new owners of the restocking authorization are not artisanal fishers of an OSPA.

A third – formal – option are (iii) *agreements*, in which the fishers' organizations would not lose the ownership of the access regime, but a business person that is interested in investing money on the sector elaborates a production agreement for a specified temporal duration

[50] Las concesiones y autorizaciones para el desarrollo de la acuicultura pueden ser transferidas a terceros mediante cesión de posición contractual para cuyo efecto debe suscribirse previamente un nuevo Convenio de Conservación, Inversión y Producción Acuícola o el Addendum, de ser el caso y contar con la autorización del Ministerio de Pesquería. Esta autorización no exime al nuevo titular del cumplimiento de las obligaciones consideradas en la resolución autoritativa correspondiente. Con posterioridad al cumplimiento de los dispuesto en el numeral anterior, los derechos de concesión en uso de área acuática otorgados por DICAPI, son tranferidos a terceros mediante la emisión de la RD correspondiente.

[51] La transferencia del derecho administrativo de concesiones y autorizaciones para el desarrollo de la acuicultura se tramitan a través del procedimiento de cambio de titular ante el PRODUCE y el Gobierno Regional, según corresponda. En el caso de transferencia de concesiones previamente se debe suscribir el Convenio e Conservación, Inversión y Producción Acuícola con el PRODUCE o el Gobierno Regional, según corresponda. Las concesiones y autorizaciones se transfieren bajo las mismas condiciones, términos, y plazos en que fueron otorgadas, sin que se exima al nuevo titular del cumplimiento de las obligaciones consideradas en la resolución autoritativa correspondiente. En el caso, de sucesión hereditaria los sucesores deben tramitar en un plazo máximo de seis meses de ocurrido el deceso, el cambio de titular del derecho. El cambio de titular del derecho de uso de área acuática, así como la licencia de uso de agua, se tramita de manera conjunta con el cambio de titular del derecho administrativo de concesión y autorización correspondiente. El cambio de titular de concesiones, excepto el caso de sucesión hereditaria, se puede realizar siempre que se haya acreditado haber cumplido con el 20% de ejecución del proyecto de acuerdo a lo establecido en el Convenio de Conservación, Inversión y Producción Acuícola suscrito entre el titular del derecho y el PRODUCE o el Gobierno Regional, según corresponda.

(usually for one or two grow out cycles (of 9-12 month each)) with the fishers and then the profits are divided. In this case, usually the productive activities are conducted by the members of the associations. In this case none illegality occurs, regardless under which law this occurred, as it is basically that the OPSA activities are funded by and external investor.

The mentioned strategies have been a common resource for OSPAs when due to high mortality events (derived from red tides or ENSO phenomena) they have lost a lot of money and do not have the capital to keep investing in the activity. Or also when due to their dependency on big companies to access export markets they are force to sell their products with no profit margin. This issue has originated that, according to key informants, around 60-70% of the bay is in the hands of big companies (although there are no studies available yet).

C.5.2. Spatial restrictions

Two main illegal activities occur in three different spaces of Sechura Bay: (1) the development of Peruvian bay scallop farming activities in areas that are not respectively authorized (i.e. in the buffer zone of the Bay and in the corridors that separate the aquatic concessions); (2) the extraction of seeds from the Lobos de Tierra island. Regarding the latter, it is important to keep in mind that obtaining seeds is a bottleneck for the production of the Peruvian bay scallop; and although formally, according to the law, seeds can be obtained from the natural environment (Figure 10) since 2006 (as we have seen in subsection C.4.5.), it is illegal to do so from Lobos de Tierra island; which is the main source of seeds together with the natural banks of the Sechura Bay.

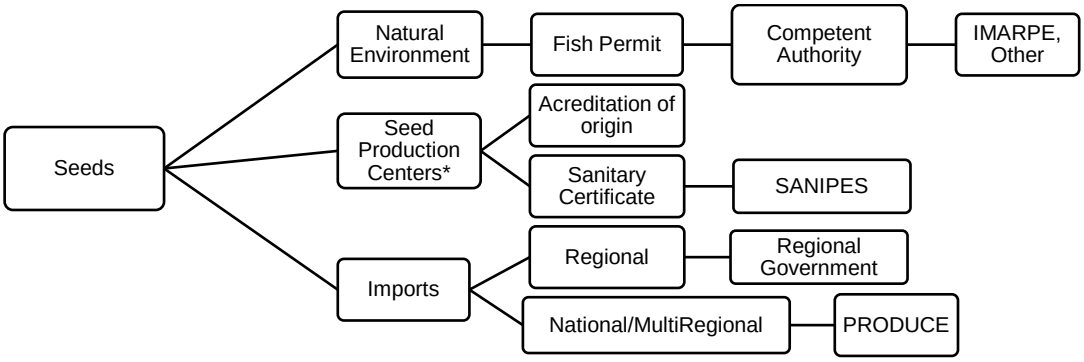

Figure 10. Way of obtaining seeds for the production of the Peruvian bay scallop. *the seed production centers need to be authorized by the regional government and habilitated in sanitary terms by SANIPES.

Source: DS N° 003-2016- PRODUCE; elaborated by María Garteizgogeascoa

C.5.3. Extraction restrictions

The main illegality regarding the harvest of Peruvian bay scallops in Sechura is the fact that it is not uncommon to pass scallops as if they come from one aquatic concession when in reality

they come from another (Kluger et al., 2019). Despite the fact that it is mandatory to land and commercialize the aquaculture production according to its origin (traceability of products), in Sechura, the aquatic areas are far away from the coast and the enforcement of rules is weak due to budget limitations that do not allow for tight marine surveillance. As a result, scallops that have not been certified for its extraction can be added to certified ones; this exchange happens in the middle of the ocean where it remains largely invisible. Another issue is the presence of *pamperos*; people that (illegally) extract Peruvian bay scallop (and whatever other species available) from the bay without valid access.

C.5.4. Law enforcement/legitimacy

As has been mentioned for fisheries, in the mariculture of the Peruvian bay scallop there are also limitations regarding the enforcement of rules and legitimacy of the state institutions. For instance, Peruvian bay scallop farming has developed illegally with somehow the implicit approval of the government as it would be impossible to produce so much scallops without the (illegal) extraction of seeds (a bottle neck for the activity) from the Lobos de Tierra island. As mentioned, the extraction in the island is banned but the fact that the ban from 2006 is still on place is being questioned by users as recent scientific studies have suggested exploitable levels in the island. Moreover, Sechura Bay was considered a “worthless” MSES until the Peruvian bay scallop industry took off. Then the state progressively designed institutional rules regarding the access that moved from formally (and exclusively) granting permit to artisanal fishers to paving the way for large-scale investors to hold the majority of property rights and to take control of the entire production process; this has decreased the legitimacy on the state institutions.

In the process of regulation of the Bay, that started in 2000 and continues to this day, as for fisheries, windows of opportunity to negotiate questions of legitimacy were made available. Indeed, many of the rules established in the Bay aimed at formalizing (informal) aquaculture concessions; for example, the illegal presence of OSPAs in the Núcleo II Matacaballo (a zoned area of the Bay) and the illegal use of one mile of the Buffer Zone (anther zoned area of the Bay) for mariculture activities was resolved by habilitating and granting aquaculture restocking authorizations in both places. This implied the derogation of a previously issued RD (RD N° 360-2010-GRP-DIREPRO-DR) that did not allow the verification of new OSPAs aiming to order the start of the process to be granted an authorization for the restocking of the Peruvian bay scallop in the Sechura Bay.

C.6. Conflicts in Aquaculture Governance and Management

Here we will present some of the conflictive situations in which the Peruvian bay scallop farming activity is embedded in two departments: Atenas (i.e. on the other side of Paracas Bay, between Paracas and San Andrés), Paracas and Independence Bay (Ica) and Sechura Bay (Piura).

C.6.1. Conflicts related to coastal space

Peruvian bay scallop farmers in Atenas have reported to feel threatened by urban development projects expanding across the Paracas peninsula and successively surrounding the settlements of aquaculture concession owners. Reports of violent visits and corruption leading in favor of further expansion and land trafficking have been received leading to scallop farmer feeling left alone by the state (key informant – November 2019). Also in the Ica region, the TGPSM (*Terminal Portuario General San Martín*), a multipurpose project has given rise to a strong conflict. The TGPSM was concessioned in favor of the *Consorcio Terminal Portuario Paracas S.A.* (TPP) in 2014 for 30 years. Previously it was the port of San Martín which was constructed in 1969 inside what after became the Paracas national reserve and served as the export window of minerals extracted in the Andes, the Camisea gas and agricultural products. In 2016 the environmental impact assessment of the TGPSM was approved. However, in 2019 a modification of the environmental impact assessment (MEIA) was processed. This included the plan to build a new road through the Paracas national reserve, a mineral warehouse, and a desalination and a sewage treatment plant. The SENACE published 277 observations to the MEIA from which 33 could not be addressed by the project owner[52]. This led to the rejection of the MEIA through the RD N° 00025-2019-SENACE-PE/DEIN. On top of this institutional response, the population of Paracas has strongly opposed the project alerting the impact it could have on the marine-coastal ecosystems, biodiversity and landscape aesthetics and therefore in the tourist and fisheries sector[53]. However, in July 2019 the SENACE annulated the mentioned RD and opened the possibility to a new evaluation of the MEIA. The whole process restarted and under the need to implement citizens participation mechanisms, in November of 2019 an 8h public audience of the MEIA took place in Paracas. The term for all people to present comments on the MEIA was opened until the 23rd December 2019 and SENACE rejected the MEIA on July, 29th; and finally also the appeal filed by TPP in November 2020.[54]

[52] https://gestion.pe/economia/senace-deniega-modificacion-eia-terminal-portuario-general-san-martin-paracas-259473-noticia/
[53] https://ejatlas.org/conflict/puerto-de-paracas
[54] https://asoparacas.pe/2020/03/03/paracas-unida-senace-confirmo-que-en-mayo-decidira-sobre-la-meia/

C.6.2. Conflicts related to marine extractive industries

(Illegal) plants for the production of fishmeal and/or fish oil from anchoveta are located in front of Atenas. When the anchoveta season starts, Peruvian bay scallop farmers have reported that waste water (from washing tanks, throwing waste water into ocean) reaches Atenas and kills off the scallop cultures.

Also, as mentioned in subsection B.6., there are conflicts between fishers from the north and oil companies and the state. In Peru the Law N° 26221 [1993] – *Ley orgánica de Hidrocarburos* established in 1993 with its Unique Ordered Text approved through the DS N° 042-2005-EM aims to promote the investment in hydrocarbon exploration and exploitation activities through PeruPetro S. A. In recent years a modification to this law has been proposed (bill 98/2016-CR, 1525/2016-CR, 2145-2017-PE) being the most controversial point a change in the payments that the companies have to do depending on the production values[55]. Moreover, in 2017/2018 under the presidency of Pedro Pablo Kuczynski (hours before his resignation) permits for the exploration/exploitation of hydrocarbons in front of the coast of Sechura and Paita – Piura department (more specifically in lot Z-65) were granted. Permits were also granted for the lots Z-64 (in front of the coast of Tumbes and Contralmirante Villar - Tumbes department), Z-66 (in front of the coast of Chiclayo and Lambayeque – Lambayeque department), Z-67 (in front of the coast of Santa, Casma and Huarney – Áncash department), and Z-68 (in front of the coast of Casma and Huarney - Ancash department). However, two months later, in October 2018 under the presidency of Martín Vizcarra, they were derogated through the DS N° 011-2018-EM because of noncompliance guaranteeing the rights of access to information and citizen participation in the decision-making processes.

In 2019, this changed and Z-64 was granted (to an Irish company: Tullow Peru Limited Sucursal del Peru[56]; and in July 2020 (DS N° 016-2020-EM & DS N° 017-2020-EM) the same occurred for the exploitation of the Z-67 and Z-68. This did not happen without the strong criticism from fishers that have questioned the participatory process indicating that the people that have signed it do not represent the fishers or the population in general. Despite this, the government has kept promoting the hydrocarbon exploration/exploitation in the coast of Peru and especially in the northern coast (Figure 11, following page).

Between Piura and Tumbes (the two departments of the north coast) 1200 active oil wells exist; those provided 66% of the national production of oil during 2018. But this area is also one of the most biodiverse points of the Peruvian sea. For these reasons, fishers and maricultors (especially from the provinces of Paita, Sechura and Talara) have carried out a

[55] https://www.radiocutivalu.org/nueva-ley-de-hidrocarburos-vulnera-el-equilibrio-fiscal-sostiene-mef/?fbclid=IwAR2fXiousSRHF1brzCfHoJSAKOBkZYtrQv9MfP9Ze8xPX5nloPSUvPvuZzA

[56] https://andina.pe/agencia/noticia-gobierno-aprueba-firma-contrato-hidrocarburos-el-lote-z64-tumbes-750192.aspx?fbclid=IwAR2_vSll99uU_CwAuGuUhHEVpGq66oMqHgmODRTbBYv84KJDjfrbHLQsiX4

number of general strikes[57] as a way of protesting throughout 2019 and 2020. Fishers have declared that the exploration activities could harm the fishing activity due to the seismic surveys needed to locate the oil wells; in addition there are concerns about pollution, especially for scallop farmers who have stressed the sensitivity of the species as a filter mollusk and the importance of meeting the sanitary requirements demanded by the international market.

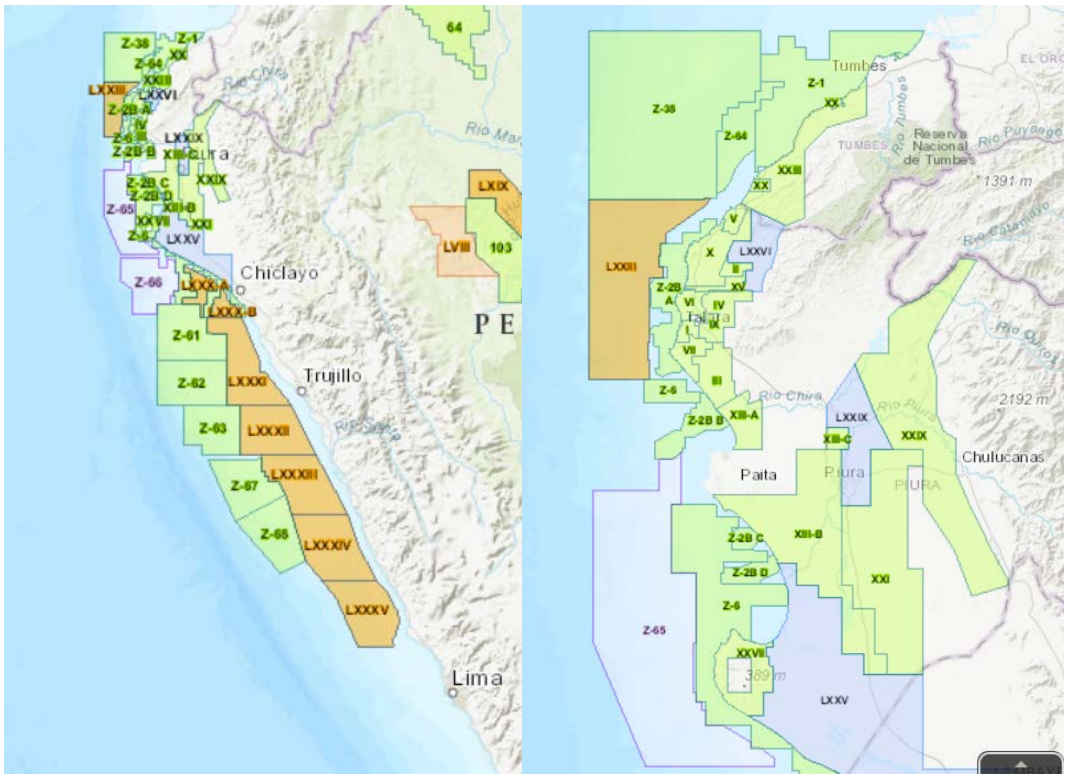

Figure 11. Hydrocarbon lots in coastal Peru; on the left general vision of the situation in coastal Peru and on the right zoom of the northern part of the country. In green lots granted through contracts, in purple lots under negotiation, in orange technical evaluation agreement contract. (Source: Perupetro[58])

In contrast, the government defends that the hydrocarbon operations have been carried out for several decades in the country without any negative effect on fishing and more specifically to artisanal fishing as many of the lots are outside of the 5 miles where artisanal fishers predominantly fish. In addition, it has declared that the state is committed to inform the population, to guarantee no impact for the fisheries sector, and has emphasized that the development of oil activities could bring huge monetary benefits to the coastal communities that still

[57] https://pescayacuiculturaperu.wordpress.com/2019/06/07/paro-de-pescadores-se-acato-en-paita-talara-y-sechura-07-06-2019/
[58] https://perupetro.maps.arcgis.com/apps/webappviewer/index.html?id=6a830a470b934f0687c8ed84c2bacacc

lack of basic services such as water and sewage networks[59,60]. On the other hand, fishers and conservation platforms have alerted several times about oil spills[61,62].

C.6.3. Conflicts related to management and governance

According to our analysis, three main conflicts have emerged in Sechura Bay in recent years. First, as mentioned before with the DL N° 1195 [2015] companies gained access to the production node of the Peruvian bay scallop value chain. Prior to this law the role of big companies was mainly to buy the product to fishers to process it and export it although since 2013 fishers have been protesting about the power of those to set up the prices. Now, big companies that have stronger capital for investment are able to produce their own product and do not need to buy it from fishers' social organizations. However, fishers still need the big companies in order to be able to export their product as they don´t have access to the export facilities (such as processing plants, market networks, etc). In addition, with the new law and the creation of the productive categories, aquatic areas falling in the category of AMYGE (the majority of the old restocking authorizations. RD N° 00006-2020-PRODUCE/DGA) are in the hands of the central government instead of in the region and subjected to a bigger taxation system and bigger environmental requirements. Second, during the last political term of DIREPRO-Piura (a new one entered the administration in January 2019) the revocation of some aquaculture concessions occurred. However, affected fishers state that the sanction that led to the revocation was not reasoned well enough. According to the affected fishers, the area was revoked for failing to file on time the semi-annual report of activities carried out. Fishers have argued that those areas, illegally revoked, were granted to companies or relatives of former political leaders[63] despite they brought the case to the courts. Third, the closure of the Lobos de Tierra island which territorially belongs to the department of Lambayeque but is directly connected to the department of Piura due to its importance as a source of seed for the aquaculture activity in the Sechura Bay. The constitutional court has dictated that the management needs to be coordinated between both departments although the political tension between both regions complicates the matter. Moreover, in 2018 IMARPE conducted an evaluation of the natural banks resulting in the availability of 13000tons of Peruvian bay scallop; a quantity enough to lift the

[59] https://pescayacuiculturaperu.wordpress.com/2019/06/07/viceministro-guevara-el-estado-va-a-garantizar-que-no-haya-impacto-07-06-2019/
[60] https://pescayacuiculturaperu.wordpress.com/2019/06/04/gobierno-impulsa-la-exploracion-petrolera/
[61] https://pescayacuiculturaperu.wordpress.com/2020/03/20/savia-peru-derrama-petroleo-en-mar-de-cabo-blanco/
[62] https://pescayacuiculturaperu.wordpress.com/2019/11/06/peru-los-derrames-de-petroleo-cronicos-e-incalculables-de-la-costa-norte/
[63] https://pescayacuiculturaperu.wordpress.com/2019/11/07/denuncian-que-irregularmente-se-les-revoco-permiso/

closure, however this has not been done despite the fact that all aquaculture norms need to be supported by the best scientific data available.

C.6.4. Conflicts among Peruvian bay scallop farmers and with fishers

Three main conflicts occurred between Peruvian bay scallop farmers and with fishers. First, some OPSAs or certain members of the OSPAs have sold their aquatic concessions to big companies or third parties in many cases without the consent of all members. Basically, some OSPA members, have expelled their members by arguing that they do not show up to the meetings (to which they have not been invited), not calling them to extract the product, etc. Second, that in contrast to the previous aquaculture law (DL N° 27460 [2001]) in which the holder of the concessions had the right over the authorized hydrobiological resources but not to the water column, with the DL N° 1195 [2015], holders of the areas do have the right to use the sea bottom, water column and its surface, vertically projected from the sea bottom, which has originated a major concern of fishers. Having the right of the water column could lead to the exclusion of artisanal fishers in aquaculture areas in which they currently fish (art.40. DS N° 003-2016-PRODUCE). The third type of conflict is sparked by the common practice of stealing Peruvian bay scallops from the aquatic areas.

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ANNEX I

Table AI. Overview of characteristics commercial and non-commercial fisheries as described by the Peruvian General Fisheries Law.

Characteristics/ Extraction	**Commercial fisheries**		**Non-commercial fisheries**		
	Artisanal or Small-Scale	**Large-Scale**	**Scientific Research**	**Sports**	**Subsistence**
Aim	Commerce and direct human consumption	Commerce	Exploratory, prospection and experimental fishing	Recreation and tourism	Domestic consumption and exchange/barter
Who does it?	Natural or legal person.	-	-	-	-
Form of extraction	*Artisanal*: Mainly manual work. *Small Scale*: Mechanized, with modern equipment and fishing systems	Doesn't detail	Doesn't detail	Doesn't detail	Does not detail
Size	Artisanal: until 32.6 m^3 of hold capacity and until 15 m of overall length. Small Scale: until 32.6 m^3 of hold capacity	Hold capacity bigger than 32.6 m^3	-	-	-
Fishing permit or authorization	Yes	Yes	Yes	Yes. With the exception of natural persons or non-embarked fishers.	No
Fishing permit term of validity	¿	Undefined (with annual accreditation of operation)	¿	¿	¿
Fishing permit transference	No	No	No	No	No
Requirements of preservation systems	No	Yes (for Direct human consumption)	-	-	-

Elaborated by Isabel E.Gonzales